HEALTH INQUIRY

(NEUROLOGICAL DISEASES, BLINDNESS, MENTAL ILLNESS, HEARING DEFECTS)

HEARINGS

BEFORE THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE HOUSE OF REPRESENTATIVES

EIGHTY-THIRD CONGRESS

FIRST SESSION

ON

THE CAUSES, CONTROL, AND REMEDIES OF THE PRINCIPAL DISEASES OF MANKIND

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HEALTH INQUIRY

(Neurological Diseases, Blindness)

WEDNESDAY, OCTOBER 7, 1953

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D. C.

The committee met, pursuant to adjournment, at 10 a. m., in the committee room of the House Committee on Interstate and Foreign Commerce, Hon. James I. Dolliver (the acting chairman) presiding.

Mr. DOLLIVER. The committee will come to order.

I hope it will be understood that the present occupant of the chairman's chair is not the chairman of this committee. Mr. Wolverton was called back to Camden, N. J., yesterday, but will be back before this hearing has proceeded very far. He asked me to get started this morning, so that we would be under way by the time he arrived.

Today, our hearings are to be concerned with the problems of the neurological disorders, with those disturbances causing blindness—and later—with diabetes. The various neurological diseases are closely linked, a fact which is symbolized by the existence of the National Institute of Neurological Diseases and Blindness. We shall hear something of this interrelationship, but the hearings for each group we shall take up separately.

This morning we are to concern ourselves with the neurological disorders. Up to very recently, these medical disturbances were not conceived of as a single problem, and it may be inevitable that for some time people will continue to consider such conditions as cerebral palsy, epilepsy, multiple sclerosis and muscular dystrophy as single, independent entities. Because these are disorders of the nervous system, however, most often of the brain and spinal cord, they are intimately related to each other. As the various types of cancer or heart disease have been considered here at these hearings as either cancer or heart disease, we shall try to consider the neurological disorders together in this hearing.

These disorders (of which, I understand, there are more than 150) constitute a major health problem for the Nation. They are a leading cause of death and the most common cause of permanent crippling. Because they are such cripplers and their victims, thereby, must frequently retreat from both the economic and social scene, it is probably inevitable that none of us has really understood the full burden of these disorders as they are felt by the individual sufferer and by the community which must aid in their care and welfare. I hope we shall reach that understanding today, and I am looking to the witnesses, who have so kindly agreed to some here, to help illuminate more specifically the nature of these disorders, their costs to the coun-

try in both humanitarian and economic terms, and finally what we are and should be doing about them.

I would like to enter the agenda which will be used as a general guide for this morning's discussion, together with a list of participants.

(The statements above referred to are as follows:)

NEUROLOGICAL DISORDERS—AGENDA

1. Purpose of the inquiry—statement by committee chairman.
2. The status of the neurological disorders:
   - What are the neurological disorders?
   - Mortality, morbidity figures?
   - Costs of neurological disorders to the Nation in terms of lost productivity, wages, tax revenue, welfare services provided by community, State or Federal Government?
   - Cost of neurological disorders to the individual and family in terms of medical expenses and personal tragedy?
3. The attack on the neurological disorders:
   - What do we know today concerning methods of prevention, diagnosis, and cure of the neurological disorders?
   - In terms of the knowledge available, what medical, educational, and other facilities and what medical manpower is presently available to deal with these problems?
   - What research has been achieved in the past decade to successfully combat the neurological disorders; to what degree is new knowledge being applied; how profound is the research attack on these problems; to what degree is manpower being available to combat these disturbances?
4. The needs of the future:
   - How much must medical, paramedical facilities and services be extended to meet the problems in various neurological disorders; what is needed and what are the present and probable financial handicaps in securing them?
   - Promising areas of research which must be pursued, new areas of research to be opened up in this field vitally necessary.
5. What can we do organizationally or by legislation about strengthening the Nation's attack on the neurological disorders?
   - In research, research facilities, and training?
   - In medical, paramedical, and other services?
   - In education, scientific, and public?

PARTICIPANTS

Dr. Cornelius Traeger, National Multiple Sclerosis Society.
Dr. F. M. Forster, professor of neurology, and dean, Georgetown Medical School.
Mrs. Ruth McCormick Tankersley, president, the National Epilepsy League.
Dr. A. T. Milhorat, chairman, Medical Advisory Board, Muscular Dystrophy Association.
Dr. Glidden L. Brooks, medical director, United Cerebral Palsy Association.
Mr. Karl K. Van Meter, executive director, United Cerebral Palsy Association.
Dr. Pearce Bailey, director, the National Institute of Neurological Diseases and Blindness.
Dr. Harry Sands, executive director, Epilepsy Association of New York.
Mr. Carl Owen, executive committee, National Multiple Sclerosis Society.
Dr. G. Milton Shy, clinical director, National Institute of Neurological Diseases and Blindness.
Dr. Frederick L. Stone, chief, extramural programs, National Institute of Neurological Diseases and Blindness.
Dr. Seymour Kety, Associate Director-in-Charge of Research, National Institute of Neurological Diseases and Blindness.

It is my understanding that Dr. Cornelius Traeger will serve as discussion leader for the group of witnesses. It will be appreciated, Dr. Traeger, if you will stand and introduce yourself for the record, and if the other witnesses will do the same, please. After that, Dr. Traeger, will you please proceed to develop the agenda in anyway which seems most apropriate to you?

Dr. TRAEGER. Thank you, Mr. Chairman, and members of the committee. My name is Cornelius Traeger, doctor of medicine and consultant medical director of the National Multiple Sclerosis Society and consultant physician of Roosevelt Hospital and attending physician at the Hospital for Special Surgery and a fellow of the American College of Physicians; a fellow of the Academy of Medicine and the New York Academy of Science; a member of the advisory council for the National Institute of Neurological Diseases and Blindness.

The other witnesses who will appear before you today, I will ask to identify themselves and to give their backgrounds, and, gentlemen, this is no time for modesty.

Will you introduce yourself now, Dr. Bailey.

Dr. BAILEY. My name is Pearce Bailey, director of the National Institute of Neurological Diseases and Blindness and also clinical professor of Neurology, Georgetown University, Washington, D. C.

Dr. TRAEGER. Our next witness is Dr. F. M. Forster.

Dr. FORSTER. I am Francis Michael Forster, professor of Neurology and dean of the Georgetown University School of Medicine; a past president of the American League Against Epilepsy.

Dr. TRAEGER. Next is Dr. Brooks.

Dr. BROOKS. I am Dr. Glidden L. Brooks, of New York City. I am medical director of the United Cerebral Palsy Associations and a fellow of the American Academy of Pediatrics.

Dr. TRAEGER. Next is Dr. Van Meter.

Dr. VAN METER. My name is Karl Van Meter and I am executive director of the United Cerebral Palsy Associations, Inc. Accepting your word as to modesty, for over a decade I have served as executive vice president in a similar capacity for various service organizations. I was director of development for the National Association of Manufacturers; I was general manager of the Red Cross Fund Raising Campaign in New York City for 6 years; I was executive vice president of the United Service Organizations for a year following October 1, 1950.

Dr. TRAEGER. Our next witness will be Mrs. Tankersley.

Mrs. TANKERSLEY. I am Ruth McCormick Tankersley, President of the National Epilepsy League.

Dr. TRAEGER. Next is Dr. Milhorat.

Dr. MILHORAT. I am A. T. Milhorat, chairman of the medical advisory board of the Muscular Dystrophy Association of America; associate professor of medicine, Cornell Medical College, and attending physician for the New York Hospital and president of the New York State Board of Medical Examiners.

Dr. TRAEGER. Next is Dr. Owen.

Dr. OWEN. I am Carl M. Owen and I am one of the members of the executive committee of the National Multiple Sclerosis Society. I was its first president and I am senior partner of the law firm of Wilkie, Owen, Farr, Gallagher & Walton, of New York, and have been a practicing lawyer in New York City since 1905.

Dr. TRAEGER. Next is Dr. Shy.

Dr. SHY. I am Dr. G. Milton Shy, Clinical Director, National Institute for Neurological Diseases and Blindness and associate clinical professor in neurology, Georgetown University.

Dr. TRAEGER. Next is Dr. Stone.

Dr. STONE. I am Dr. Frederick L. Stone, Chief, Extramural Programs, National Institute of Neurological Diseases and Blindness.

Dr. TRAEGER. I think, Mr. Chairman, that completes our list of witnesses.

Mr. DOLLIVER. Will you proceed as you see fit, Doctor?

STATEMENT OF DR. CORNELIUS TRAEGER, MULTIPLE SCLEROSIS SOCIETY

Dr. TRAEGER. I am truly grateful for the privilege of appearing before you to present the case for the neurological and sensory diseases in behalf of the National Committee for Research in Neurological Disorders.

The National Committee for Research in Neurological Disorders was organized from national voluntary health agencies and professional groups, in response to a growing demand for a national-research program in the vast field of neurology and sensory disorders.

The members of the national committee are the National Epilepsy League, the National Multiple Sclerosis Society, the National Society for Crippled Children and Adults, the Muscular Dystrophy Association of America, the United Cerebral Palsy Associations, the Committee for the Public Understanding of Epilepsy, and the American Academy of Neurology.

The primary objectives of the national committee are: (1) To survey the current needs in the field of neurological and sensory disorders, with special reference to medical research and the training of specialized personnel and treatment facilities; (2) to make these needs known to the public, to universities, and to research institutions and to Government agencies; (3) to stimulate research and training to the extent of the studied needs; (4) to jointly attack national problems in these areas of disease, where the combined action of the interests of this committee would be more efficient than the action of any one of these societies alone.

I want to speak for the neurological and sensory diseases—the neglected and forgotten ills of mankind—among them both chronic and infectious diseases.

The number of persons dying from neurological and sensory disorders is exceeded only by the number of persons dying from cancer and heart disease.

The number of those presently affected by neurological and sensory disorders, which are of grave or less serious importance, may be estimated conservatively at about 20 million people. That is a great many citizens.

For most of these diseases the causes are unknown and no specific treatment is available. They chiefly affect children and adults in the very prime of life. Of course, that does not exclude us oldsters, as we also get neurological diseases, but the greater majority of these people are the productive manpower and womanpower pool of this country.

It was emphasized by the chairman that the broad concept of neurological and sensory disorders constituting a major health problem in the United States has only recently gained roots.

While most of us think of cancer as cancer and heart disease as heart disease, the concept of the neurological diseases seems to have been separated into categories such as poliomyelitis, cerebral palsy,

epilepsy, and many other diseases. Each seemed to constitute a separate problem; but this just is not so.

Just as the problems of heart disease are linked up to the entire circulatory system, so are all these diseases referable to the nervous system—the brain, the spinal cord, and, of course, their important appendages—the nerves of the body, the peripheral nerves, and the sensory organs which provide us with the powers of sight and hearing.

As a distinct group of disorders, the neurological and sensory diseases create a highly serious public-health problem, and, as I said before, they affect approximately 20 million persons in the United States and at least half of them are gravely disabled.

Among the major crippling chronic neurological and sensory disorders—and the detailed breakdown is in the prepared statement which has been referred to—are such diseases as epilepsy, cerebral palsy, hemiplegia, Parkinson's disease or shaking palsy, apoplexy, multiple sclerosis, muscular dystrophy, myasthenia gravis, blindness and deafness, chronic meningitis, chronic encephalitis (which we speak of as brain fever), poliomyelitis, neurosyphilis, the various tumors of the nervous system—tumors of the brain and tumors of the cord and of the peripheral nerves, and so on.

The list also includes that vast number of handicapped children who now occupy State institutions due to either brain injury or to disease. Those are the important diseases, but there is a whole host of what we call minor ones which are just as disabling in terms of manpower, and that category includes such diseases as shingles, migraine, and others. Of course, the question of migraine is one of chronic headaches. The man who has migraine is not any more useful on his job than a man with a brain tumor.

No other group of disorders causes such permanent crippling—and this crippling is usually so severe as to cause profound psychological, social, and economic dislocations to the sufferer; no other group receives so little medical or research attention, and yet no other major group of disorders represents such an economic loss to the Nation. The needs are great and, as I shall try to explain, the work to be done is urgently important.

It has been said before that it would be possible for a surgeon to start cutting through the human body, beginning at the feet, and that such an amputation could be extended quite a ways—2 or 3 feet—and at the end of that space there would still be left a partially useful human being. But if such a surgeon started cutting from the head down, he would not get very far. At the end of 2 inches you would not have a human body. Such is the importance of the brain to the health and life of man.

I know that statistics are boring, but sometimes they are revealing. An analysis of the amount appropriated from both the Federal Government and the public for research in the years 1951 to 1952, reveals the following significant figures: $29 for each victim of cancer; $1.75 for each victim of heart disease, and 3 cents for each victim of a neurological or sensory disorder. There is a marked dislocation. What is responsible for the neglect of these neurological and sensory disorders?

There are many reasons. In the first place, they do not inspire the immediate fear of death. Cancer has that faculty, and when a man has a cancer he thinks, "This is it; I am going to die," although

strokes are the No. 3 killer and brain tumors are a frequent cause of death.

The second reason is that the majority of these diseases are not considered contagious or infectious, such as tuberculosis or venereal disease or the flu, with the exception of some of the serious ones such as meningitis and poliomyelitis.

Third, the contributing public is not as aware of the drama of the neurological and sensory diseases as they are of cancer or heart disease or tuberculosis or arthritis, although much tragic drama is commonplace in such diseases as cerebral palsy, multiple sclerosis, Parkinson's disease, or muscular dystrophy.

Another reason is that there has always been a great deal of mystery about the brain, which has tended to diminish research efforts in this field. For example, when I was a student, and for a great many years after, neurology was described as a science of diseases for which nothing could be done. This we are hoping to change.

Another very important reason is that the nervous system—that is, the brain and spinal cord—are enclosed within a rigid bony envelope—the skull and the spinal bones—which makes exposure difficult and often hazardous. You cannot go chopping into a man's brain to do research. It is a difficult and dangerous procedure, and the same thing is true with operations on the spinal cord.

Still another reason, equally important, is that many of these neurological disorders have been surrounded frequently by an aura of shame or guilt or social embarrassment. The patient with epilepsy or cerebral palsy or multiple sclerosis is ashamed of his disease and often tries to conceal or to minimize the external manifestations of his disease. The relatives of such patients are too often shy in regard to the affilicted ones. The patients and their families are loathe to discuss the matter and are reluctant to seek others to speak for them.

It is for these reasons and others that only a small portion of the funds appropriated for scientific research have been made available for investigation of these disorders.

Our fellow citizens, however, in recent years, have demonstrated an awareness of the seriousness of these problems by the creation of increasingly effective voluntary health agencies, dedicated to the solution of these various disease mysteries. Such agencies are represented here today.

Much is known about these diseases. A large book could be written containing the presently available knowledge, but a much larger book would have to be written to contain that which is yet to be learned. Science has begun to develop new lines of investigation and we must pursue others which promise major advances in the development of effective treatment in these neurological and sensory diseases.

As a result of the work done in the past 10 years, such disorders as Parkinson's disease, myasthemia gravis, and especially epilepsy, can be partially controlled through the use of new drugs. Precision diagnostic instruments, like the electroencephalograph and the electromyograph, operate in the field of neuromuscular disease somewhat like the electrocardiagraph operates in heart disease, and the radioactive tracer technique is also pretty well developed. These all mark advances whose potentialities are far from exhausted.

New improved surgical techniques for operations on certain types of diseases have been developed; new diagnostic techniques and some new treatments resulting from ACTH and cortisone have achieved good results in regard to diseases of the eye. We are beginning to use such precision tools as the electronmicroscope, employing the technique of X-ray and also the technique where tiny little microelectrodes can be inserted into the patient and be almost concentrated on a single cell, and the culture of planting nervous tissue outside the body so that these living cells grow and reproduce in a test tube under certain conditions.

All of these techniques are new in this field and they promise great things. Within the past year we have seen injections which promise diagnostic tests in multiple sclerosis.

Then, we have the method for regenerating nerve tissue, and this is important, gentlemen. If a muscle is cut or if a bone is broken, those tissues grow back, but there has been the classic formula and belief in neurology that once nerve tissue—that is, brain tissue or spinal tissue—is cut, that is it; it never regenerates and it never grows back, and leads to a permanent injury. Well, in the field of neurology, to paraphrase the song, we have come up with the idea that It Just Ain't Necessarily So. We will hear more about that later.

We think that you can with experimental research techniques make the brain and the spinal cord, once cut, regenerate and maybe even to function again. These are all of the things which have stimulated our efforts in the last few years. One of our great boosts was the Neurological Institute. The rising tide of public interest in the neurological and sensory disorders was largely responsible for the establishment of the National Institute to work on such diseases and blindness.

In the summer of 1950, under Public Law 692, this Institute was established. Now, for the first time in the history of our Federal Government, there was a concrete expression of interest on the part of Congress in these mysterious neurological ills, and now they are developing a double attack on the problem with voluntary agencies and the Federal Government through the newly created Institute. They have done a good job—a coordinated job—and the interest of the public has been stimulated in direct ratio to the increased development of the program of the National Institute of Neurological Diseases and Blindness. But all this is not nearly adequate to solve the problems posed by 20 million sufferers.

At this point I would like to take a moment to talk about the Clinical Center at Bethesda. In the new Clinical Center at Bethesda, the Institute's research program is geared to finding improved methods of diagnosis, prevention, and treatment and rehabilitation of neurological and sensory disorders, with special reference to epilepsy, cerebral palsy, multiple sclerosis, muscular dystrophy, glaucoma, cataract, and so on. The potential facilities of the Bethesda program provide a unique opportunity for the first telling attack on these crippling disorders.

To unravel fully the basic mechanisms of the nervous system and its wide ramifications throughout the body—extending from its apex, the brain, to all organs of the body and their important sensory endings, will require cross fertilization of newer techniques developed

from many disciplines in all the clinical and basic sciences. And it is this type of unique cross-fertilization that the Clinical Center facilities were designed to give.

This cross-fertilization of clinical and laboratory disciplines within the Institute and among all the National Institutes of Health will make possible the first complete frontal attack in history against neurological and sensory disorders. Such a comprehensive attack, we are convinced, will eventuate in yes-and-no answers to the problem of the crippling disorders which it is our responsibility to resolve. But the practical consequences in research to be achieved in the work in the Bethesda program are not its only contribution. In fact, it might well be that its greatest contribution will reside in the stimulus and special facilities it offers to visiting scientists from all parts of the country, who may come to Bethesda, participate in the program, and then return home with fresh concepts and technical formulations for their own special projects.

At this point I am going to interrupt myself to see if I can anticipate a question, and I think it is a good question, and that is, Why cannot the voluntary health agencies and the States take over the entire job of providing funds for research? Well, I have been the medical consultant to a voluntary health agency for 4 years, and at its inception you had a choice between collecting money to educate the public about the disease or collecting money to turn over to research. We chose the latter. We spent in the last 4 years $500,000 on some thirty-odd research projects, but that does not begin to cover the need. We had requests for $3 million—six times the amount which we spent—for research, and we could not collect those funds. You go to a man and say, "I represent the Multiple Sclerosis Society. What about a donation?" He would say, "What is multiple sclerosis?" And the same might be said of muscular dystrophy or myasthenia gravis. Even the late Senator Tobey, whose daughter had multiple sclerosis, was not able to pronounce the name. He said, "Multiple cirrhosis."

That is the problem we are up against. We have even got funny names for these diseases; and when you mention to someone such terms as "myasthenia," some people will say that is a "dirty word."

What about the situation in medical schools? A year ago I had a meeting in Albany with the commissioner of health and his staff, and we said, "Look, the voluntary health agencies cannot begin to cover the problem, the Federal Government cannot begin to cover the problem, and what can we get from the States?" He said the State hospitals were bulging out at the seams and there was not enough money to take care of patients who are already patients of the State; that they could not get increased appropriations for the patients and that they had patients sleeping in corridors and that they could not start a research program because it was hopeless.

The same thing happened when I had a conference with the deans of eight medical schools in New York to try to get them to introduce new research programs at their universities. They have the same problem. The medical schools are broke; they do not have the monetary source or the staff to make up the deficiency.

We are in a war atmosphere and in a war economy, and that takes the major part of our money, and the medical schools just cannot operate in new fields. They are doing well to survive with the job they have.

The same thing is true with training grants. Of the Nation's 79 medical schools, only 21 have complete neurology units for the training in research of neurological diseases, and there are only 151 available positions in the whole United States for the training of neurologists. There are today about 250 qualified neurologists in the entire country to support a burden of 20 million patients.

In some areas of this country there is 1 neurologist to 650,000 population. The neurology teachers in many of our medical schools are not qualified neurologists. Several States in the United States do not have a single qualified neurologist in the State, and there are 7 such States. What this means in terms of the sufferers can be judged when we realize that of the 1.5 million epileptics in this country 1 million are not receiving the treatment for their disorder, where treatment can be successful in a majority of the cases. This is because of the lack of neurologists or of physicians interested in the diagnosis of neurological diseases.

It now takes an average of 6 years before a sufferer of multiple sclerosis is diagnosed as such and almost as long before cerebral palsy can be identified.

There is no field of medicine where any diagnosis is more important because once the central nervous system is really damaged that damage is irrevocable.

The funds needed for the training of teachers in neurological and sensory disorders in the medical schools throughout the country can be determined by the requests for aid from the schools themselves, and the average need based on a recent survey amounts to more than $2.5 million.

Well, there is the problem. I have tried to spell out the story of neurological and sensory diseases as they apply to the citizens of this country. I have spoken too much, but there is a lot I have left unsaid. Gentlemen, I am 58 years old and in 1927 I had tuberculosis. In 1950 I had my first attack of coronary disease and I also have osteoarthritis of my spine and my fingers, but I am working and I am in here punching, but, if I had epilepsy, I probably would not be here—I probably would not even have a job; if I had multiple sclerosis or chronic encephalitis or the shaking palsy, I would not be here; if I were totally deaf, I would not be here; if I had paralysis or hemiplegia or paraplegia, I might be here, but I would have to be here in a wheelchair with someone to push me; if I were blind, I might be here with someone to lead me. The epileptic, the multiple sclerotic, and the cerebral-palsy sufferer are loath to marry and raise families. They cannot travel; they cannot go to the movies or the theater; they are denied all the more pleasant aspects of living with others. The deaf cannot hear the voices of their loved ones and the blind cannot see the joys of the world or the faces of their friends and families. The economic loss to the country in these diseases is appalling.

When one considers the money that is spent in attempting to alleviate the symptoms of many of these diseases for which there is no one cause, the loss of wages of those so afflicted and those who have to care for them; when one considers the tremendous loss to the manpower pool and even for defense purposes, the result is incalculable. Many, many of these sufferers are public charges, represented only by deductions on the income tax.

Gentlemen, I am grateful for this opportunity. Thank you.

The CHAIRMAN. Are there any questions?

Mr. DOLLIVER. Doctor, I understand that these various diseases which you have named, and many others like them, have in common the effect upon the central nervous system.

Dr. TRAEGER. Yes, sir; all of these diseases are characterized by their cause-and-effect relationship to a disease, either in the brain or the spinal cord or its appendages.

Mr. DOLLIVER. Are they generally thought of as degenerative diseases of those parts of the body?

Dr. TRAEGER. There are many of them which are considered degenerative diseases. We do not even know whether some are degenerative diseases or not. By that I mean it is quite possible to autopsy or examine the brain of people dying from many of these diseases, and these brains under the microscope look like a normal brain—the epileptic brain, that is, the epilepsy which is not caused by injury or by a blow on the head, but the so-called essential epilepsy and the kind that comes on for no apparent reason—such a brain looks the same as a normal brain.

In Parkinson's disease a brain does not show anything unless it is due to hardening of the arteries or to arteriosclerosis or to infection.

In multiple sclerosis we do have a very definite type of microscopic pathology. We can see small areas scattered indiscriminately throughout the brain and spinal cord of hard stony plaques which represent areas where nerves have been destroyed, and wherever those nerves go, that function is gone.

Might I interrupt, Mr. Chairman, to introduce two new witnesses who have just come in. One is Dr. Harry Sands. Would you rise and identify yourself?

Dr. SANDS. I am Dr. Harry Sands and I am executive director of the Epilepsy Association of New York, and also representing the National Epilepsy League. I have been director of the committee for public understanding of epilepsy and formerly on the faculty of New York University and Brooklyn College in New York. I am a psychologist, primarily interested in public education and in the improvement aspect of neurological disorders.

Dr. TRAEGER. Dr. Kety, would you rise and identify yourself?

Dr. KETY. I am Dr. Seymour Kety, associate director in charge of research for the National Institute for Mental Health and the National Institute for Neurological Diseases and Blindness. I am also professor of physiology at the University of Pennsylvania. My primary responsibility in the National Institute of Neurological Diseases and Blindness is director of the program for basic research in the nervous system. I am a physician and primarily a physiologist.

The CHAIRMAN. Could we have chairs for the gentlemen who have just risen and introduced themselves? The clerk will put chairs there for them so they can be seated with the other members of the panel.

Mr. Dolliver, you may proceed.

Mr. DOLLIVER. Now, from what you have said, I take it that diagnosis of these diseases is extremely difficult because they have similar manifestations to others?

Dr. TRAEGER. Dr. Bailey would like to answer that.

Dr. BAILEY. I do not think these diseases are difficult to diagnose—especially difficult—for trained individuals, but the big problem is we do not have the trained individuals to make the diagnoses, as Dr.

Traeger has brought out, and the training facilities in this field are very inadequate at the present time.

I might also emphasize that I do not think there is any category of disease where an early diagnosis is more important, as Dr. Traeger mentioned, once the nervous system is permanently damaged, it remains so. So, unless you make the diagnosis in a certain disease before this permanent damage arises in order to treat it, you may be dealing with a situation which is beyond your control and against the interest of the patient.

Mr. DOLLIVER. Are any of these diseases caused by organisms or germs?

Dr. BAILEY. Yes. The nervous system is very complex, but it is also very vulnerable to all types of diseases. You can have infection, you can have vascular disturbances, you can have accidents and injuries, you can have toxic diseases, poisons, industrial poisons, and so forth, all affecting the nervous system. In addition, you have those diseases which the societies here represent in which we do not know just what the causes are. We have ideas and we are developing new ways to attack them but we do not have the final answers. For the big population of permanently or semipermanently crippled individuals we have no specific treatment for at this time.

Inasmuch as they attack in an age group which is young, the crippled individual is cared for by the community or the family, and also by the tragic self-help that he can give himself in many instances.

Mr. DOLLIVER. The cases which are in this category which are caused by the invasion of germs, I assume, to a certain extent can be controlled if you find out what the germ is?

Dr. BAILEY. Yes, particularly if the germ is bacteria. It can be fought with penicillin. Neurosyphilis once was a very common scourge. Now it is rare.

Mr. DOLLIVER. Is there any evidence to indicate this category of diseases that you do not know the cause of are hereditary?

Dr. BAILEY. Not in very many cases. There are some considered congenital, which is not hereditary—some influence on the growing fetus. The hereditary element is not too strong even in epilepsy, which is very often considered as a hereditary disease.

Mr. DOLLIVER. Is it true that sometimes these diseases are caused by injuries of birth?

Dr. BAILEY. Yes; that is quite frequent.

Mr. DOLLIVER. Or prenatal abnormality?

Dr. BAILEY. Yes. That is quite frequent. That is what I meant by the congenital as distinguished from hereditary when the actual gene is involved; the hereditary stream.

Mr. DOLLIVER. You make a distinction between the hereditary stream and the prenatal influence and the birth injury, I take it?

Dr. BAILEY. Yes, I do.

Mr. DOLLIVER. How far has the research gone? Perhaps it will come up later. How far has research gone with respect to what Dr. Traeger has referred to; namely, the reconstitution of damaged nerve and brain tissue?

Dr. KETY. If you were to have asked that question 5 or 6 years ago, I think the answer would have been a fairly hopeless one of complete ignorance. We all know that in the very common injuries of the

spinal cord the patient remains a hopeless cripple because of one very obvious defect. The spinal cord, and for that matter, the brain also, does not show any evidence of regeneration or of healing. If one fractures a leg, the bone of the leg heals and he eventually is restored to quite normal functioning. If one wounds the skin, the skin heals. If one wounds the spinal cord, however, the spinal cord does not heal in the sense that it can regenerate and restore its functions. It heals with a dense scar which prevents the growth of the nerve fibers which transmit the nerve impulses, and that has been classical pathology and classical clinical understanding of the nature of spinal injury.

Interestingly enough, about 5 years ago, Dr. Windle, who incidentally is coming to Bethesda as Chief of our Laboratory of Neuroanatomical Sciences, who was then professor of anatomy at the University of Pennsylvania, and Dr. Chambers, were working on a field which was not remotely connected with this problem of regeneration. They were studying the effects of a peculiar substance produced by bacteria which causes fever in animals and in man, and they were trying to localize the site of this fever production—where does it occur and how does this material act. In order to do that they did as many scientists do, they performed a series of experiments in which they cut the spinal cord of cats under anesthesia. They cut the spinal cord in various places in an attempt to see if there was one place which if cut would prevent the rise in fever.

Well, their experiments on the site of localization of fever were not terribly important, and I do not recall whether they got anywhere with the experiments, but they made a very interesting incidental observation: That these cats who had their spinal cords cut, cats who should have remained completely paralyzed from then on, these cats who got this particular substance showed some regeneration of the spinal cord, and when they examined these cut spinal cords under the microscope they found, to their astonishment, that nerve fibers were growing across the cut. This was really an epoch-making discovery.

Incidentally, it comforts me because it was a discovery made in the line of basic research. These people were not looking for a cure for paraplegia; they were looking for something different. Incidentally, because they are trained observers and because they also had an element of good fortune, they found this very interesting phenomenon that regeneration was occurring in the spinal cords of these cats, a phenomenon which no one had ever observed before in any significant quantity.

They went on with this and implanted a nerve into the brain, and they gave their animals this particular substance and found that the nerve grew right in the brain in a most amazing manner, and their slides which I have seen and which were reported at one of the physiological society meetings, show these nerve fibers growing beautifully into the brain.

That, as I said, is an epoch-making discovery. It does not mean that we can go out right now and treat patients and they will immediately get well. There is a great deal more that has to be learned. It is not enough to have the nerve fibers grow across the spinal cord; we have to know where they go to. Their growth has to be controlled. It has to be possible to stop the growth after it has achieved an optimum distance and the fibers have grown to the regions where they are

destined to activate. But the important thing here is a major step which had been held to be impossible before, and Dr. Windle, who intends actively to pursue this problem, has the greatest confidence that within the next decade he will have a very important answer to the question of regeneration in the central nervous system and a great deal of hope for the future victims of spinal cord injury, and who knows, even for the present victims.

Mr. DOLLIVER. When was it that this rather epoch-making discovery was made?

Dr. KETY. It was made about 1948 or 1949.

Dr. TRAEGER. When you are through questioning Dr. Kety about this particular problem I would respectfully ask you to refer to Dr. Bailey to tell you something about the economic problems posed by paraplegics, which is very germane to the problem Dr. Kety is discussing.

Mr. DOLLIVER. I would just like to make another comment about that. That appears to me to be another example of the importance of basic research. Here research is going on in a field entirely different or dissociated from this problem of nerve reconstitution. Because, as you said, the observers were trained in basic research, they immediately saw the significance of what happened.

The CHAIRMAN. Are there any other questions?

Mr. PRIEST. Dr. Traeger, I understood you to say that the Federal appropriations for all victims of neurological diseases amounts to about 3 cents per victim. That includes all the victims of what we call the neurological diseases?

Dr. TRAEGER. Neurological and sensory.

Mr. PRIEST. I want to express my deep appreciation of your very logical and persuasive presentation of the overall subject this morning. I thought that you did a very magnificent job. This committee, of course, has been interested in these matters for a number of years. I do not take any personal credit because all of the committee have worked on it, but it just happens that of the bills which bear my name and which have become public laws, I am perhaps more proud of the mental health bill and the bill authorizing neurological and blindness institutes than any others that bear my name. I think that they are in the fields which have been most neglected in the past and have greater opportunities for some real progress.

This 3 cents per victim appropriation, in my opinion, is very, very much too low, and I hope when budgets come before the Appropriations Committees for the next year it can be greatly improved.

There are several other questions that I think may be covered by other witnesses and I will not take further time now, Mr. Chairman.

Dr. TRAEGER. Thank you, Mr. Priest.

I would like to have Dr. Bailey tell the committee something about the economic importance of paraplegics, people who are paralyzed in their limbs, which has a direct bearing on the work that is being described.

The CHAIRMAN. Would there be any objection to withholding that until the members have questioned?

Dr. TRAEGER. Not at all.

Mr. HESELTON. I am every glad that our colleague, Mr. Priest, has made the statement he has because I think that represents the general

opinion of the committee. However, I want to bring up another phase of it, not necessarily to you, but to the entire panel, for two reasons.

It happens that yesterday my attention was called to an article with reference to the tragic lack of care in one of our States of mental patients. I dare say that if anyone saw fit to go into the other States they would find relatively the same conditions, but it was almost unbelievable in terms of the inadequate food. I think that something like 58 cents a day was being allowed for food for the patients. There were completely inadequate attendants to see that they got outdoors They were sleeping in corridors and so on.

I cannot believe that the State legislatures are made fully aware of the conditions. I think it is not only the responsibility of the Congress, but there is a definite responsibility on the States themselves.

Certainly, while I share Mr. Priest's desire that Congress find the means somehow to improve conditions so far as these particular diseases are concerned, the longer these hearings proceed, the more convinced I am that a task is being laid before this committee and the Congress that is almost beyond its power to deal with financially.

I am not criticizing any of you experts, but we have heard some people in connection with heart disease and in connection with cancer and arthritis and rheumatism, and every one has a good case.

But with the financial situation of this Government such as it is, it is utterly impossible to do all the things that you ask us to do next year, or in a number of years. Having that in mind, I would hope that there would be a realistic attitude on the part of those appearing before us. You should know where the emphasis should lie, whether it is in the care of people suffering now; whether it is in research; whether it is in the training of additional personnel or in some other field. I think that it would be very helpful to us if we could get from some of you people the priorities. For instance, what is the No. 1 thing that should be placed before anything else in the field, as you see it? I know that is a difficult thing to ask anyone. We asked someone yesterday. He frankly admitted that he felt his own field was the most important. I think that anyone sincere and interested would say that.

We have the very difficult job of making a decision and picking out those things which are most immediate and can be done most effectively, even though we reluctantly have to say, "We are sorry, but the taxpayers cannot bear the full burden you are asking us to impose upon them." That is just more or less an observation. I hope from these hearings that we will have something concrete.

The CHAIRMAN. I think it is an observation well taken in view of what has been presented in these hearings as far as we have gone. On the other hand, while there is apparently much to discourage, yet I do not want this committee to become discouraged in its endeavor to meet this problem. I realize the difficulties that we face, but at the same time there has been much of optimism that has been presented by the several witnesses who have appeared here, and I am hopeful that the inspiration that comes with the knowledge there is so much being accomplished will encourage this committee to attack this problem, which we recognize to be a very great one, in a way that will ultimately lead to some solution. In that aim we are seeking the help of individuals who appear before us, and asking them what they think should be done. We are all aware of the fact this problem

is a great one, that it is not only a Federal problem but a State and local problem, and is also a problem for the professions involved.

I did not hear all of Dr. Traeger's statement today, but I heard enough to indicate to me that he was laying a pretty severe indictment against somebody. I do not know who John Doe is in this case, whether it is the medical profession that these studies are not carried on more fully in our universities, or whether it is someone else. That is helpful to us in the way of criticism.

That is the thing that we want to know—where the deficiency exists, and then we would like to turn to the other side—what can be done about it.

This committee is engaged in seeking the cause of these conditions; seeking whether they can be controlled. In other words, we are looking to you people, who are so intimately connected with these diseases, for some program that we, as representatives of all the people, can help make effective for the common good.

Dr. TRAEGER. I am grateful to you for your remarks because they point up precisely our job—your job and our job.

The research in nuclear fission has been going on for 20 years all over the world. Research in nuclear fission was taking place in Italy, Germany, and in the Scandinavian countries, America and England, but it was pedestrian; it was slow. It would still be pedestrian, it would still have leaden feet, if we had not gotten into World War II and somebody in our hierarchy said, "Here is $2 billion, get the best brains in the country and get the answer." We had the answer in 1 year. That is the problem presented by these diseases, these mysterious diseases. We do not even know what causes them. We autopsy these people and cannot tell why they die, and they are dying. They represent a tremendous financial loss to the country in manpower. We have gone all through that. If we could get, not 3 cents per patient, but $2 a patient, I think that we could do a job that the Atomic Energy Commission did, or what preceded the Atomic Energy Commission did, in nuclear fission, and in about the same time.

Mr. HESELTON. How many patients are there?

Dr. TRAEGER. About 20 million.

The CHAIRMAN. There are enough to work on.

Dr. TRAEGER. Yes; and it is not easy. That, to my mind, Mr. Heselton, is not an unrealistic budget. I hope to be able to convince you people.

The CHAIRMAN. I think aside from government itself there is a responsibility that falls not only on the organizations of a medical character, but on the people generally. Last night I addressed an organization known as the Tall Cedars of Lebanon, a Masonic order. I learned that that organization had taken upon itself a responsibility with reference to providing funds for research into muscular distrophy in connection with the work being conducted at the New York Hospital. That opened my eyes to possibilities, when an organization such as that, not an exceedingly large organization, takes up its responsibility and endeavors to raise funds to carry on research. It is an indication of what can be done if the public generally is made to realize what the conditions are and what its responsibilities are. I think that we are moving along in that respect.

I think that all of these organizations—heart, cancer, and those represented here today—and all the various organizations that are out making their drives for funds from the public are necessarily showing the public that the need exists and what can be accomplished if the funds are provided. So I am hopeful as a result of these hearings there will be an awakening of the public conscience; of its responsibilities and the part it should take in the carrying on of this work that will mean so much to the future happiness of our people.

Mr. HELLER. Dr. Kety, I have always accepted it as classic that cells once destroyed never regenerate; is that correct?

Dr. KETY. Yes. If the cell is destroyed, it does not regenerate.

Mr. HELLER. You talked of an experiment whereby the nerve fiber in the spinal cord and the brain was cut and there was complete regeneration; is that correct?

Dr. KETY. Yes; there was certainly partial regeneration.

Mr. HELLER. Is not the question of regeneration the real nub of the neurological problem?

Dr. KETY. Certainly, if one could get all diseased nerve cells to regenerate, one would be able to accomplish a great deal.

Mr. HELLER. How does this regeneration come about?

Dr. KETY. I do not believe that Dr. Windle understands the mechanism of the regeneration yet, although he knows it has occurred.

I think that it should be pointed out this was not a dead cell which came back to life, which was regenerated, because the fibers in the spinal cord which were cut were the long fibers coming from the cells. The cells themselves may be up in the brain or lower down in the spinal cord. That is the part of the cell that was regenerated.

I think that it would be a much larger problem and a less hopeful one to look for regeneration of a dead cell. This was merely a part of the long nerve cell which was capable of regeneration.

Mr. HELLER. Is there any method used today on man which can bring about regeneration of destroyed cells—let us say in the brain?

Dr. KETY. Physicians were quick to try the material that Dr. Windle had elaborated on. The results, however, were not entirely encouraging because it is one thing to get the first stages of regeneration and another thing to get complete restoration of functions. A great deal more research lies between this great surge forward and a practical application to the patient's disease. Factors are responsible for the control of this regeneration, for the direction of the way in which the nerve fibers grow which are completely unknown and upon which more work has to be done. If one were permitted to speculate without limit, one could postulate with the newer work being done on the culture of nerve cells outside the body, plus the ability to cause these cells to grow within the brain and spinal cord. Perhaps 50 or 100 years from now it may be possible to put a culture of nerve cells into a destroyed area of the brain and by guidance, which we do not understand yet, have these new cells grow into the places where they are destined to have their function. I think such speculation, however, is unwarranted at the present time.

Mr. HELLER. When was this electroencephalograph brought out? I get the impression from Dr. Traeger's testimony that cells can now be grown and be reproduced.

Dr. KETY. Yes.

Mr. HELLER. How far advanced are you with the electroencephalograph?

Dr. KETY. Yes. I am not sure that I understand the relationship.

Mr. HELLER. I got the impression that there is some method being used for the regeneration of cells, because once you can prove, as I understand it, that destroyed cells can by some method be regenerated, you can probably get the answer to your neurological diseases. So I am trying to find out how far you have advanced to the same stage in man that you discussed about the spinal nerve fibers and spinal cord of the cats.

Dr. TRAEGER. May I interrupt? I think there is a little confusion in terms. The electroencephalograph is a diagnostic instrument. It is not a treatment instrument. It is designed to reproduce brain waves, records of brain waves, like the electrocardiogram can produce records of heart waves. It is not a treatment instrument.

Mr. HELLER. Is there any treatment?

Dr. TRAEGER. There is no treatment of humans yet devised to regenerate nerve cells. This work has been done on animals and it is very encouraging. Now further research is needed to see how it can be applied to humans.

Mr. HELLER. I see.

Dr. TRAEGER. I think what Mr. Heller has in mind is the idea of being able to transplant a piece of skin on a burned area, or transplant a cornea, or a piece of bone from a bone bank, and make it grow. Those thing are possible.

Mr. HELLER. I cannot argue with you.

Dr. TRAEGER. Bone will regenerate and the eye cornea at times will take, and a skin graft takes, but a dead nerve cell in the brain or the spinal cord is finished.

Now, the work that has been done by Dr. Windle is not on the dead nerve cells but with cut, living cells, and even those cut, living cells never grew together before. Now we can make them grow together. Whether they will work after they have grown together is another problem.

Mr. HELLER. How much money would be required, in your opinion, to pursue that type of work?

Dr. TRAEGER. Dr. Kety, will you take a gamble on the funds necessary to finish up Dr. Windle's work?

Dr. KETY. Dr. Windle, in the National Institute of Neurological Diseases and Blindness, will have a budget, we expect, of the order of $125,000 a year for his laboratory. His laboratory will be doing other things than studying regeneration. I think it would be possible that Dr. Windle could intelligently use a great deal more money than is represented by the budget that he has requested and which it is possible to provide for him. I would hesitate to estimate how much money would be required to solve all the facets of this very interesting piece of work because it involves many fields. It involves the biochemistry of regeneration, bacteriology, pathology, and neurophysiology and neuroanatomy. It would have immense ramifications, I would think, and Dr. Windle would be able to intelligently use any amount of money he had available.

Mr. HELLER. Should it be pursued vigorously?

Dr. KETY. I think so. I feel that Dr. Windle intends to do so.

Mr. WILLIAMS. You mentioned among these neurological diseases migraine. Migraine is, as I understand it, pretty widespread among people and, yet, am I correct in assuming that no cure has ever been found for it?

Dr. TRAEGER. You are very correct. One of the worst cases of migraine that I ever came across was a person who was in a very high place in the Federal Government—an extremely important person—and when she had migraine her job stopped. That was the end of that story for a day, or 5 days, or a week; she was just as useless as though she never was in the job. That happened on many occasions. Migraine is one of the diseases which is intricately involved in the nervous system and circulatory system. There are many theoretical causes of migraine. Some drugs have been developed which help migraine in some people, but those same drugs do not do the job for everybody.

That is what I call a minor problem, but, as I said, it is not minor to the fellow who has it; it is a curse.

Mr. WILLIAMS. I know several Members of Congress who suffer from migraine headaches. It is really pitiful to see them on a day when they are really suffering. They are through as effective individuals for that day.

In regard to epilepsy, is not quackery rather widespread in the treatment of it? Also, medical racketeering? Are they not fair prey for racketeering?

Dr. FOSTER. Mr. Williams, that, fortunately has been decreased considerably, thanks to the action of Congress and the Food and Drug Administration. It is just because they find there are not enough men to handle the problem. There are not enough doctors trained in neurology to make service available to the 1½ million epileptics, so that they fall prey occasionally to quackery. Fortunately, I think it is on the decrease because of the closing up of mail-order practices.

Mr. WILLIAMS. Is it not true that for a while that did present a problem to the medical profession?

Dr. FOSTER. It very definitely did.

Mr. WILLIAMS. I would like to ask one more question.

I know that I have had young men get in touch with me in regard to claims they would have with the Veterans' Administration. Their cases would be diagnosed as either migraine or epilepsy or one of the nervous disorders. Those claims were usually denied by the Veterans' Administration on the ground that they could not be service-connected; that the condition of migraine was a condition rather than the effect of something that had occurred, or the result of something that had occurred, and that condition would have come about regardless of whether they had been in the service or not.

With regard to all these neurological diseases or ailments, can any definite cause be attributed to any of them?

Mr. BAILEY. In regard to your first question, I was at one time associated with the Veterans' Administration in a medical capacity with neurological patients. In epilepsy that is thought not be service-connected; you frequently have a point of interpretation. The man, for example, was put under strain in combat and sustained an injury in combat. His resistance to epileptic seizures could be lowered to the extent that he would have certain seizures that he would not have had if he had not been subjected to strain or a head injury.

It does not mean, at the same time, that he would not have sustained head injury in civilian life or be put under strain. You have that interpretation, which is not a medical interpretation.

Mr. WILLIAMS. That would be a cause of aggravation?

Dr. BAILEY. I think so.

Mr. WILLIAMS. Where the disease was present but aggravated.

Dr. BAILEY. The disease actually was not present, but everybody has a certain tendency to epileptic seizures. Some people have a high resistance, some people a lower resistance. In one person, if he has a head injury, it lowers his resistance to the extent that he will develop seizures. Another person might have a similar head injury, but his resistance, or threshold, as they call it, will not be lowered sufficiently to produce epileptic seizures.

Mr. WILLIAMS. Doctor, you enumerated in the beginning quite a number of these neurological diseases.

Dr. TRAEGER. Yes.

Mr. WILLIAMS. You mentioned migraine, epilepsy, cerebral palsy, and many others. Can any of those be cured?

Dr. TRAEGER. No, sir.

Mr. WILLIAMS. Not one?

Dr. TRAEGER. Not one. Not only are they not curable, many of them do not even have effective methods of control of the symptoms, and most of them we do not know what causes them to begin with.

Mr. WILLIAMS. It would appear to me, in view of that, our problem is in providing domiciliary care and making the patient as easy as possible; is that correct?

Dr. TRAEGER. That is part of the problem, his rehabilitation, the whole concept of rehabilitation. To my mind, the important thing is to find out what causes these diseases so we will not have to provide domiciliary care for them. That is the tail end of the wagon. That is the expense, the burden upon the taxpayer and on the family. Our job as doctors is to try to prevent those people from becoming custodial-care patients or, at least, to devise some method of control so they are adequate to carry on the business of daily living, cutting their food, brushing their teeth, telephoning, and that sort of thing.

Mr. HESELTON. That is what I had hoped you would suggest. It seems to me we are beginning to get the emphasis. You believe that the research to find out the cause of the disease is of utmost importance, more important, perhaps, than the care of those afflicted; but in order to do that you have to have trained personnel?

Dr. TRAEGER. Precisely.

Mr. HESELTON. If you had $100 million today, the question is, Could you use it effectively? That is my point. Where do we put the emphasis?

Dr. TRAEGER. At the risk of incurring the extreme disfavor of all my colleagues, I would say—I would not know how to use $100 million today.

Mr. HESELTON. That is it exactly.

Dr. TRAEGER. I would not know how to use it intelligently, but I would, with a fifth of that sum, perhaps, develop an intelligent program so that within a foreseeable time we would have personnel and places and the toys and instruments and the security of these researchers so that we could come up with the answer.

Mr. HESELTON. I agree completely with what my chairman said. I want these hearings to be a source of hope and confidence for the American people and you people, you who are interested in trying to bring up the proper results, but, as I see it, trying to appraise the situation which confronts us and the American people, this is not an analogy to the success we had with nuclear research. Because of the war it was possible to pick that out and do it no matter how many billions we were going to spend. We cannot do that in this field because there are so many other things that call for our sympathy and our efforts. That is my reason for trying to get you to give us the key to the program of what the chairman wants to come up with.

The CHAIRMAN. Are there any further questions, gentlemen?

You may call your next witness, Dr. Traeger.

Dr. TRAEGER. I think that it would be of some importance to the committee to hear something about some of these various diseases, what they are, how many people are affected, what they cost the Nation, and things that have to be done about them, and so forth.

Now I am going to call on the various doctors representing the agencies, and they may do one of two things: they may make a summary statement of their problem as they see it, or the committee might ask questions to be answered. I leave that to the choice of the individual. I now introduce Dr. F. M. Forster.

STATEMENT OF DR. F. M. FORSTER, PROFESSOR OF NEUROLOGY AND DEAN OF GEORGETOWN UNIVERSITY MEDICAL SCHOOL

Dr. FORSTER. I think that after listening to you gentlemen on this committee you are very well informed, and I think you have a very good idea of what epilepsy is. I might just briefly, though, say a few words more about it.

We all understand by epilepsy those generalized convulsions, the great seizures that people have, but we sometimes overlook the fact that there are other kinds of attack which are quite disturbing also.

There is sometimes a youngster who may have a very sharp blacking out, and he may have a whole series of them. That of itself does not seem very important, but a kid sitting in school may miss a good part of what is being taught to him. He may appear quite dumb and stupid because he does happen to black out and miss that which was being told him.

There is another kind of seizure, a peculiar one, in which a patient does not fall down. He may walk around and talk and say something relevant and have no recollection of it. I can bring that home to you by telling you of a school teacher that I took care of in Philadelphia. During the last war they were having a general assembly of the school faculty and the students in the amphitheater. The school band struck up our national anthem, and at that point he had one of these seizures and remained sitting in his chair and cursing audibly. When he came to the anthem was over and he did not know what had happened, but he knew it was bad.

Now, fortunately, we were able to save his job with the school board because rationally it was not possible for him to be a Nazi. His whole future hung on that fine margin.

These are the kinds of seizures that people have. How many of them? The figures of the draft board are 1 out of 200, which would

give us about 800,000 in the country. There is a fallacy in that figure. We all know that that is a selected age group, and these youngsters who have seizures in school enough to disturb their learning process, they are given the nickname of "Fitsy" in school and other derogatory terms, and they may, by medicine, get rid of these seizures, so they do not appear in those draft figures.

Likewise we have the veterans that Mr. Williams had in mind a few moments ago, whose seizures develop after the draft age, who would not appear in those figures. That is the reason why we think that the proper figure probably is somewhat closer to 1½ million people across the country.

That, I think, sets the total picture of what the patient has with seizures, and the total incidence is at about 1½ million in the country.

So far as the cost of this to the patient and so on is concerned, we are not primarily concerned here with service, and yet I think we should know it probably costs them, as a very minimum, about $100 a year for treatment. That is a small thing, really, proportionately.

The real problem is that many of these people are incapacitated and cannot work, so that there is a loss to the country in manpower productivity.

I have yet to see a patient with seizures who is working and carrying on his job at the level of his own capabilities.

Now, I want to preface this by saying that in my own practice I have taken care of physicians and clergymen and lawyers and engineers and people in all walks of life. Every one of those men, while still gainfully employed, certainly would have been doing a better job and would have been working at a higher level were it not for his seizures.

Even though an epileptic can be employed—and it is difficult if he is an epileptic—he is still not doing as much for the community as should be done.

Mr. DOLLIVER. Mr. Chairman, may I ask a question?

The CHAIRMAN. Have you finished, Doctor?

Dr. FORSTER. Yes, sir; pending questions, Mr. Chairman.

The CHAIRMAN. Mr. Dolliver.

Mr. DOLLIVER. The disease that we call epilepsy has been known for many, many centuries, has it not?

Dr. FORSTER. Yes, sir; it is the most ancient of all. It is probably the most ancient of all diseases.

The CHAIRMAN. You will have to go back pretty far, because we had some testimony here the other day that rheumatism was observable in the mummies.

Mr. DOLLIVER. Is that a matter of historical record, or do you, like the osteoarthritis people, see the evidences in the mummies?

Dr. FORSTER. No, sir; it is historical. Actually, we cannot tell from the brain of an epileptic whether or not he ever had seizures. This is based on the descriptions of Hipprocrates and even prior to Hipprocrates in the oldest recordable medical literature. I think much of our problem in epilepsy, too, is that in those days it was considered a visitation of spirits, so that it is referred to in the Bible—I believe in St. Luke, but I am not certain. Because of that reason it was called morbus insputatus, or spitting sickness.

It was considered in biblical times that when a man fell in the street with a seizure the passers-by went over to spit on him, so that the demon could not get out of him and go to the passers-by.

The Romans, on the other hand, thought it was a good spirit, and when a seizure occurred in the senate, the senate adjourned sine die, as a sign of the gods that no more business was to be transacted that day.

I think the evidence that ours is an old disease is there, sir, without the mummy.

Mr. DOLLIVER. Is it definitely determined that it is a brain lesion which causes epilepsy?

Dr. FORSTER. Yes, sir. I think it was about in the 1600's when a British physician, Sir Thomas Willis, first concluded that the seizures arise from the brain.

It was about 1870 when Sir Hughlings Jackson, another British physician, pointed up the fact that it came from the outermost portion of the brain, the cortex, where the cells are.

In 1945 two American neurologists, Dr. Lennox and Dr. Gibbs, of Boston, proved it was an electrical discharge from the gray matter of the brain.

Now the work going on is to find out what sets off this gray matter both electrically and biochemically. These are the fields in which the future lies.

Mr. DOLLIVER. Are there any specific medical remedies that relieve the fits?

Dr. FORSTER. Yes, sir. During this era of mysticism and spirits, when epilepsy was known as ambulanta incantatus, it was then when neurology began to come forward that was the beginning of real treatment. This was almost that kind of fortuitous thing that Dr. Kety described for Dr. Windle's work.

Sir Stephen Hauptman in 1857 was presiding at a medical meeting, and learned that someone prescribed bromides as a means of decreasing sexual desires, and he was concerned with that, and he gave his patients bromides and found that the seizures disappeared. That was the beginning of the treatment.

In 1912, when phenobarbital was introduced as a sedative, the QED kind of mathematical interpretation was made that, if bromides are sedatives and if phenobarbital is a sedative and if bromides are good for seizures, then phenobarbital should be good for seizures.

Phenobarbital was tried and happened to be a success. Thank heaven that of all the barbiturate derivatives phenobarbital was the first one that was found, because it has turned out to be the best.

The next great stride was by the Boston group, Dr. Merritt and Dr. Putnam, who were concerned, because in order to keep some of their patients from having seizures they had to carry the anticonvulsant drugs to the point where they were drowsy, where the kiddies fell asleep in school and began to flunk. They felt that perhaps it was not necessary for a drug to be both a sedative and an anticonvulsant, that perhaps they were separate. They went to the drug houses and got from them the drugs that the chemists had designed for sedatives but which had failed to be sedatives. They tried these on cats, whom they gave electrical shock to cause seizures. Out of those drugs they chose the three which did the best job in stopping the induced seizures and

transferred their use to the wards and the clinics of the hospitals and tried them there.

The best of those was dilantin, the next step forward.

Since then we have developed about 6 or 7 more drugs, 3 of which are aimed primarily at the child with the small seizure. One or two are aimed primarily at my friend, the schoolteacher, or his kind of problem, and the rest are aimed at the overall problem.

I think that is a thumbnail sketch of the development of the field, sir.

Mr. DOLLIVER. I take it from what you have said that these sedatives are merely a palliative rather than a cure?

Dr. FORSTER. Yes, sir. We wish we had something—we do not see it forthcoming yet—that would cure the disease and then the patient would no longer need to take medicine. Unfortunately these medicines are not even so selective that a patient can get by with just one of them. Most of the patients need a combination of such medicines, so that we do not even have one overall drug to control all kinds of seizures.

We may have a course of treatment of penicillin in neurosyphilis, for example, for 10 days or 2 weeks, and that is the end. Here at the present time the patient who has seizures, if he is in the fortunate group whose seizures are controlled, must then take these medications the rest of his life.

Mr. DOLLIVER. Is it self-medication? Do the patients take the medicine when they feel the seizures coming on?

Dr. FORSTER. It is much like the treatment of diabetes, sir. Each patient is himself a research project. We work it out until we get that level of medication which will completely stop his seizures. This is nailed down at the dose he is to take. It is explained to him very carefully that if he slips up on that dose he may expect trouble. We follow them repeatedly to be sure they are actually taking their medication.

Mr. DOLLIVER. The fact is then, to sum up, a patient suffering from epilepsy is in a position where, if he gets into the hands of a competent neurologist, his disease can be brought under control completely at the present time?

Dr. FORSTER. Yes, sir. We think we can control about 80 percent at the present time.

Mr. DOLLIVER. Thank you, Mr. Chairman. That is all.

Mr. CARLYLE. Mr. Chairman?

The CHAIRMAN. Mr. Carlyle.

Mr. CARLYLE. Doctor, it seems to be thought by some that when a child is afflicted with epilepsy he will in all probability, in many cases, outgrow that affliction. Is that true?

Dr. FORSTER. There are a number of children who have the small seizures or little lapses, and in that sort the general tendency is not to have those later in life. If they are present in the youngster, usually by the age of 20 they disappear. If not, they are very rare after the age of 30.

Now, there is one other problem, though. Those children oftentimes develop real convulsions later on in life. For the major seizures, though, there is no tendency to outgrow them.

Mr. CARLYLE. That is all, Mr. Chairman.

Mr. HESELTON. Mr. Chairman?

The CHAIRMAN. Mr. Heselton.

Mr. HESELTON. Doctor, is there a shortage of personnel in connection with treatment of this disease?

Dr. FORSTER. Yes, sir. We are limited by that number of neurologists Dr. Traeger referred to, the 250 across the country. That is one of our problems.

Mr. HESELTON. In this instance is it because of the lack of training facilities and trained personnel, or are the young people not interested in this work?

Dr. FORSTER. We are finding more and more young people interested in it, Mr. Heselton. Those of us who are working in this field constantly attract younger men to us.

Let me say that I happened to be an intern at the Boston City Hospital when Dr. Lennox was working there, and Dr. Merritt and Dr. Putnam were doing these original trials on dilantin. There was no other course in life but this.

I think each of us has gone off from there and set up a group of our followers in the same fashion, so that we are disciples of disciples now.

I am sure that with all of us spotted all over the country, as we are now, with more facilities we could meet that problem.

Mr. HESELTON. Do our medical schools offer adequate courses, generally speaking?

Dr. FORSTER. Well, those schools with strong neurological departments do. We in the American League Against Epilepsy who are primarily concerned with this are anxious to increase the student interest in the field of epilepsy. During my presidency we went out and raised a fund of $100,000 through people interested in the problem and from families who have members with seizures, and so on.

That money was divided up in prizes and it was announced it would be used over a year's period for the medical students who did the best research or wrote the best papers. There were about 15 prizes. The money was divided up.

We stimulated interest in every medical school. We had students from almost every medical school sending in papers. We were not interested in the papers and we were not interested in them getting the money. We were interested in having them work in this field.

Mr. HESELTON. What is the story about the research being done in this field?

Dr. FORSTER. Well, sir, as to the research being done in this field, the electroencephalograph research, which Mr. Heller brought out before, is in our field, and it is pointed out that this is a matter of measuring electrical abnormal discharges of the brain.

The next problem is: Why the abnormal discharge?

There is at the present time a group of investigators who are ferreting into the problems of the underlying chemistry of the brain and the underlying chemistry that produces the electrical discharge. That is one type of investigation.

Since the central nervous system, the brain, is such a complex interconnected system, another group of investigations going on is concerned with the process of hunting for that particular spot, somewhere dead center, we could say, which can fire out to all the rest of the brain and throw the entire brain into convulsive activity.

Now, the other investigative work that is going on, or some of it, is a bit pedestrian, that most of us are doing in the clinics, in trying new drugs and critically trying to assay them.

On this business of treatment, though, nowadays with the further development of science, we should look elsewhere for that, rather than just taking a drug like phenobarbital, that has a ring moved over a little bit, and trying that for a couple of years and seeing that it is not any good and trying another one. The real hitting at the problem is by those people who are trying to tag the carbon molecule of phenobarbital with an atom and trace it and find out where it goes.

That is also true of all those people studying the enzyme chemistry of the drug and the effect on the brain. By that type of approach we think we may be able to come far closer in shorter order than by merely using the trial-and-error method most of us are using.

Mr. HESELTON. Do you know whether the Atomic Energy Commission in its medical program has given any attention to this?

Dr. FORSTER. I cannot speak for certain on that. I know that the University of Buffalo laboratory was set up for this particular problem about a year and a half or 2 years ago. I am not sure what the relationship was with the Atomic Energy Commission.

Dr. TRAEGER. May I answer that, Mr. Heselton?

Mr. HESELTON. Yes.

Dr. TRAEGER. The Atomic Energy Commission provides radioactive isotopes for laboratory workers and research people to use to tag certain medications, with the idea of being able to trace those medications.

You see, when you give a person medicine you do not know where it goes. You assume it goes to the brain, to the thyroid, to the joint, or whatever it is. If you tag it with a radioactive atom you can follow it to see where it goes.

The function of the Atomic Energy Commission is to provide certain types of radioactive materials which can so be used.

Mr. HESELTON. What is the situation in this country as compared to other countries? Are we more suspectible to this?

Dr. FORSTER. No, sir.

Mr. HESELTON. Or is it generally true?

Dr. FORSTER. This is generally true. Wherever there are valid statistics the incidence is approximately the same.

Mr. HESELTON. Does climate have anything to do with the incidence?

Dr. FORSTER. No.

Mr. HESELTON. That is all, Mr. Chairman.

The CHAIRMAN. Any further questions, gentlemen?

Dr. FORSTER. Mr. Chairman?

The CHAIRMAN. Dr. Forster.

Dr. FORSTER. I wonder, Mr. Chairman, if I might for a moment put on my other coat.

The matter of the medical schools was brought up several times. Speaking now as a dean, I think I might be able to give you some information you may like to know.

Obviously you wonder why the universities, which we have long looked to as the citadels in knowledge, are not forthcoming in backing research. This is not only true for this institute but for all institutes.

I would like, in case you are not aware of the plight of the medical schools, to say that at the present time the tuition range in medical

schools in most areas is somewhere in the neighborhood of $900 per year per student, which we think is terrific, really, but the cost of educating that student in the medical school averages, across the country, around $3,300 per year. Therefore, we in the medical schools are operating at a loss.

The private philanthropic funds are no longer available, or to a very limited degree, so that the medical schools have that particular plight.

Actually, I happen to be more fortunate than most of my colleagues because the rector of our university understands what we are doing. For most of the deans of medical schools one of the chief jobs is to sell the president of the university on the idea of not letting go of the medical school, because they look at it as the hole in the bucket of the finances of the university, and they feel that the medical school is siphoning out the funds of the whole university.

If you do not mind that parenthetic interjection, sir, I think that is the situation in the medical schools.

The CHAIRMAN. That is a very thoughtful suggestion you have made, and it certainly will have the consideration of the committee. I would not want to infer that we had not already done so. That has been a subject which has given the committee in the past considerable trouble in its endeavor to solve the problem. However, it is one that should be solved, and we can only hope, with the spirit of optimism that pervades these hearings, that we will find some way of doing it.

Mr. PRIEST. Mr. Chairman, would the chairman yield?

The CHAIRMAN. Mr. Priest.

Mr. PRIEST. I do not want to ask the chairman a question he might not be in a position to answer, but I just wonder if the chairman knows whether or not the Department of Health, Education, and Welfare has now or is considering some program to submit to the Congress on this question of medical education? Has that been considered, so far as you know?

(Discussion off the record.)

The CHAIRMAN. I regret, Mr. Priest, that I am not able to make as definite an answer as I would like. There have been indications that such a program is in process. I hope that it will not take too long to process the program in the Department. Having in mind, however, that it is a new department, you can readily realize that it is not easy for them to come up quickly with a general program.

However, there is every indication that it is under consideration, and if the Department does not come up with a program maybe this committee should come up with a program.

Mr. PRIEST. Very good.

The CHAIRMAN. It is our intention to see that something is done. I know the great interest that you have had in this whole subject in the years that have passed. I feel very fortunate that you are a member of this committee and are participating, as you have, in these hearings. It will be very helpful in the days that are to come.

I also want to take this opportunity of saying that I am greatly pleased at the interest which has been shown by the members of the committee both on the majority side and on the minority side in these days of the recess of Congress, when you have yet felt the responsibility attached to your positions, which has brought you back into Washington for the purpose of participating in these hearings.

Are there any questions, gentlemen?

Before we proceed there was a question which came to my mind in connection with what you were saying, Dr. Forster, and also in connection with what Dr. Traeger had said. How many hours of neurological training does a medical student get at a medical school in the course of the medical training?

Dr. FORSTER. That, of course, varies rather widely, Mr. Chairman; but I think that in those institutions which have a well set up neurology program we still use the didactic method of lectures as a sort of alphabet for their training, and they get 25 or 30 or 35 lectures, depending upon the school.

Where the main teaching is done at the bedside, the schools vary a little bit in the length of time.

We have 4 weeks of constant work with the students, 2 weeks in the junior year and 2 weeks in the senior year at the bedside, on grounds. in the clinics with the outpatients, doing nothing else but neurology: just living, eating, and sleeping with neurology residents and neurology teachers.

I think that we might say that sometimes in the neighborhood of about a total time effort of 5 or 6 weeks of clinical neurology out of the entire program is what it is.

In addition to that, there are courses in the anatomy of the brain and the function of the brain and the pathology of the brain that are usually handled on an interdepartmental basis.

Probably the total amount of time spent, which would be full time, if you sorted out all of these hours, would be somewhere in the neighborhood of about 4 months.

The CHAIRMAN. I have observed during these hearings that frequently it has seemed to me as a layman there has been a deficiency of time which is allotted to some of these diseases which have come to our attention.

Dr. TRAEGER. Mr. Chairman, may I interject two remarks at this point?

In the first place, Dr. Forster is talking about Georgetown University, where he is the dean. They have a strong neurological department. At the university I went to we had a strong neurological department. I have had a lot of neurology as an undergraduate medical student.

But there are many medical schools in this country which have no neurology or very little neurology or neurology comes under "internal medicine"—it is a footnote to medicine—and their training is nonexistent. You cannot compare the training in neurology of a place like Columbia, Harvard, or Georgetown with 20 medical schools I can think of where neurology was the last man on the totem pole and just hardly even exists. It depends on the boy running the show.

There is another thing I would like to tell you about, and that is the question of the 250 qualified neurologists. Now, I do not want the members of this committee to get the idea that there are only 250 doctors in the United States who know anything about neurology. That is not true.

However, the medical profession has policed itself. It has developed a system of board certifications. Today a man cannot proclaim himself to be a specialist in neurology or a specialist in surgery or a specialist in obstetrics or in gynecology unless he has passed the examinations of a certifying board.

Now, there are boards covering all of the various categories, or many of them. The American Board of Neurology has qualified 250 neurologists. These men are certified.

There are other doctors who by their interest in the problem probably would be just as good, and we are glad that there are. We are glad that they do exist, because without them this problem would be just chaos.

The CHAIRMAN. Your remarks, Doctor, with reference to the deficiency in some medical schools as to teaching neurology, are just one more count in the indictment that you have been drawing this morning which we have been taking note of.

Dr. TRAEGER. I thought I was going to be a sort of interlocutor but I turn out to be a district attorney. Maybe it is a better idea.

Mr. HESELTON. Mr. Chairman, may I ask a question?

The CHAIRMAN. Yes.

Mr. HESELTON. What does it mean when a man is certified as a neurologist? Does that mean that he can do certain very delicate practices other than those an ordinary practitioner can do?

Dr. TRAEGER. No, sir; that is purely an interfraternity police matter.

There are certain criteria established by the neurological board. He must graduate from a first-class medical school. He must have so many years of general internship and so many years in neurological internship and residency. He must have so many years in the practice of neurology, limited to neurology.

When the candidate meets all of those requirements, then he comes before the board for a written examination; and it is a honey. The mortality on those examinations is fantastic. It is better than 50 percent, I believe.

Dr. BAILEY. The average is about 50 percent.

Dr. TRAEGER. When they get through with the written examinations, they come before the board for an oral examination and a bedside examination. When they get through, it simply tells the world that this man has read the books and knows his job.

Mr. HESELTON. He is a specialist?

Dr. TRAEGER. That is right.

Mr. HESELTON. To whom other doctors can turn?

Dr. TRAEGER. That is right.

Mr. HESELTON. That does not mean, I take it, that the ordinary practitioner cannot prescribe, for instance, for migrane or even for epilepsy.

Dr. TRAEGER. Precisely. The ordinary practitioner can do that, and that is the great problem that faces us. I do not expect the ordinary practitioner, bless his soul, to be an expert. But this information is available to the ordinary practitioner. He can treat diabetes. He can treat heart disease. He can treat arthritis. He can treat tuberculosis. He can treat neurological diseases. It is all in the book. The information is available for him. If he does not know where to find it, he can call up.

Goodness knows, we get 400 calls a week dealing with multiple sclerosis. The information is available. They can do it. There is no secret to this thing. It is just interest. Are they interested?

The average person who comes into the general practitioner with epilepsy or with arthritis causes him to say:

"Oh, gee whiz. I do not know what to do about this. I do not know. I cannot cure it. I have arthritis myself. I wish I could do anything about it, for I would cure myself. My son has epilepsy. I wish I could cure it for him." That is why we are worried about it.

Mr. HESELTON. I wanted to ask Dr. Forster one other question. Is diet a factor in epilepsy?

Dr. FORSTER. During the period of time when we had relatively few medicines that were really worthwhile diet was employed rather extensively. It is not as successful as a medical treatment as the use of drugs in the treatment of epilepsy. It works best in children. Of course, the youngsters are the hardest of all to keep on a diet. They will slip off and get an ice cream cone or something like that. It can be used, but it is not a very effective way of treating them.

Mr. HESELTON. That is all.

The CHAIRMAN. I think what Dr. Traeger has said is highly important. This special study as to this certification as to ability is important because, as I observe, we are getting more and more, all the time, into a field of specialized practice, especially in our cities. The general practitioner seems to me to be disappearing. Everyone is becoming an expert in some particular line.

When you go to your physician he says, "I would like to have Dr. So-and-so's opinion on that." Then maybe it will be Dr. Somebody Else's opinion, or something else, and so forth and so on. So it has been observable to me that practically all physicians are becoming specialists. I can see the importance of the certification to which you have referred.

Are there any further questions?

Mr. HELLER. Mr. Chairman?

The CHAIRMAN. Mr. Heller.

Mr. HELLER. Doctor, can the American Medical Association furnish us with the number of men qualified in the major divisions of medicine, such as the diseases we are studying?

Dr. BAILEY. I do not think they could furnish you with a list of the number of men qualified. They could furnish you with a list of the number of men certified in various specialties.

Mr. HELLER. Certified?

Dr. BAILEY. Yes.

Mr. HELLER. May we have that list for the record, to be inserted at this point?

Dr. BAILEY. Yes, sir.

Mr. HESELTON. Would the gentleman yield?

Mr. HELLER. Yes.

Mr. HESELTON. It would be good to have the addresses, so that we could determine where these specialists are concentrated.

Mr. HELLER. Can the addresses be furnished?

Dr. FORSTER. There is a published book on that, the Directory of American Medical Specialists, which lists the men by specialty and geographically, also. It is a whole volume.

Dr. BAILEY. It gives the addresses.

Dr. FORSTER. It gives the whole business.

Mr. HELLER. Is that issued by the American Medical Association?

Dr. FORSTER. No. It is published by the board.

Dr. BAILEY. We could send it.

Mr. HELLER. It is accepted by the profession?

Dr. BAILEY. Yes.

Dr. FORSTER. Oh, yes.

Mr. HELLER. Suppose we get that list and put it in the record at this point.

The CHAIRMAN. I do not know whether it would be too large to put in the record or not.

Dr. TRAEGER. It is a big volume.

Dr. BAILEY. About 1,500 pages.

The CHAIRMAN. It could be an exhibit, probably, that we could have available to us.

Mr. HELLER. I will withdraw that request.

(The list of practicing certified neurologists was submitted to the committee and this list was not incorporated in the record but is available in the committee files.)

The CHAIRMAN. I might say that I think the doctors, scientists, and laymen who have appeared as witnesses in these hearings would constitute as fine a set of specialists as I know of. I have been greatly impressed. I know that all the members of the committee have been impressed with those who have appeared before this committee.

You may proceed, Doctor.

Dr. TRAEGER. Mrs. Tankersley, do you have anything to add to the problem of epilepsy, as you see it?

STATEMENT OF MRS. RUTH McCORMICK TANKERSLEY, PRESIDENT, THE NATIONAL EPILEPSY LEAGUE

Mrs. TANKERSLEY. I would like to make 1 or 2 sort of disconnected remarks just as an augmentation to the things that have been said about epilepsy.

First, I would like to underline, from my point of view as president of the National Epilepsy League, the tremendous need for more qualified doctors, more men trained. Every year my agency gets about 25,000 to 50,000 letters from epileptics who are receiving totally inadequate medical care, asking us where to send them. We have nothing whatever to say to them. There is not any place we can send them. There are not competent doctors and big enough clinics and enough clinics for us to send these people to. It is the most terribly disheartening feeling to run an agency and to have these people coming to you for help and having practically no place to send them, and their family doctor, who cannot keep up with everything, is not up on the medicines that will control epilepsy.

So that our biggest problem in epilepsy is that we can control 80 percent of these people if we can only get them a doctor and get them good medical care.

Another remark I would like to make about that is that of all the neurological disorders epilepsy is probably the most hopeful, because we can control 80 percent of it. We are not controlling it, however. What that means in terms of the economy of this country, I think, is tremendous. One out of every 200 persons is an epileptic. If we could put 80 percent of those people into the taxpaying, self-supporting, able-to-fight, able-to-work rolls of this country, it would mean a tremendous amount of production and manpower.

During the war the epileptics were not allowed in the service. Some of them were well enough controlled so that they flew planes in the carrier service over to England. They were able to do remarkable work if we got medication for them. But there was so much prejudice against them because of most of them not being controlled that we lost a lot of manpower.

I know about this very personally, because my husband was an epileptic. During the war even the railroads would not give him a job, when they were so desperate for help. They would not give him a job because even a railroad company was afraid to take a chance on an epileptic; and he only had, oh, 2 or 3 seizures a year.

Another point I would like to make is that I have never had it explained to me, but somehow the expenditure of public funds in research and in training is always followed by a greater response from the public itself. This year we were awfully pleased to get some increase in the budget of the National Institute of Neurological Diseases and Blindness, and we hope that when we testify later this year for an increase again in that budget that we will be able to show that that is true; that we will be able to already see private funds coming in. I can see it in my own agency already, because I have got at least something to say to these epileptics who write to me, the ones who are having difficulty being controlled. I can say, at least: "There is a central place where research is going to be conducted. There are going to be more men trained. There is hope for you. There is hope for your little girl that in the next few years we may be able to find something to control her."

That is going to encourage the parent of the epileptic child to support my agency, so that I can do the social job for that child; I can get that child accepted in the schools; and when it grows up I can get it a job.

I think that there is a threefold reason for public funds in epilepsy. First, that we must have public funds for research. We have been over that thoroughly, I think, this morning.

Secondly, that public funds in research and training will promote private funds and will double the value of the Government dollar.

And there is one more thing I wanted to mention, which is to congratulate this committee. I have been before several committees and have heard several committees over the last 10 years, and this is the first committee that I have been before which I think realizes the importance of the overall neurology picture. My agency and the doctors in epilepsy feel very strongly that all of our work in Government and in private life must go along with the other neurological disorders.

Mr. DOLLIVER. Mr. Chairman?

The CHAIRMAN. Mr. Dolliver.

Mr. DOLLIVER. I do not know who this question can be answered by. I have observed this large new Institutes of Public Health building going up out here at Bethesda. It is a large hospital. I wonder how many beds there are going to be devoted to these neurological diseases?

Dr. TRAEGER. Dr. Bailey.

Dr. BAILEY. The number of beds allocated for neurological diseases at the present time is 52 out of 500.

Mr. DOLLIVER. There are other diseases, of course, which are included?

Dr. BAILEY. Yes.

Mr. DOLLIVER. Thank you, sir.

The CHAIRMAN. Doctor, you may proceed, if there are not any further questions.

Dr. TRAEGER. I now call on Dr. Milhorat to tell us about muscular dystrophy.

STATEMENT OF DR. A. T. MILHORAT, CHAIRMAN OF THE MEDICAL ADVISORY BOARD OF THE MUSCULAR DYSTROPHY ASSOCIATION OF AMERICA

Dr. MILHORAT. Mr. Chairman, may I preface my remarks with the statement that I was very happy to hear you refer to the Tall Cedars of Lebanon and the noble efforts they are making for patients with muscular dystrophy.

It is true with them, as I believe with members of this committee, that to see is to know, to know is to be convinced; and, in the case of muscular dystrophy, to be convinced is to act on behalf of the patients.

I mention this because 3 years ago the Tall Cedars were in the same position insofar as knowledge of muscular dystrophy is concerned as the members of this committee. They sought a national objective for their philanthropy. They looked at various human diseases. They saw patients with muscular dystrophy. Their choice was decisive.

Now, what is muscular dystrophy? It is a disease in which the involuntary muscles waste and are replaced by fat and connective tissue. There are no periods of advancement. There is no improvement. The course is relentless. It is progressive until finally total infirmity has been reached and the patient succumbs to the disease.

Who are the victims of this disease? Two-thirds of the victims are children in whom the disease has its onset between the ages of 2 and 5. At first the grave prognosis is not recognized. It is thought perhaps the stumbling and awkwardness is merely due to something minor, like flat feet; but it is not long before it is recognized that this is a serious disease. By the time the child is 10 years old he is usually confined to a wheelchair and in most instances succumbs to the disease by the time maturity would have been reached. It is a serious disease for which there is no treatment.

Another serious aspect is the fact that these patients develop contractures. Crippling and deforming shortening of the muscle tendon units occurs, so that the joints are pulled and held out of the normal positions.

Third, it is an hereditary disease. In about 35 percent of the cases one can obtain a history of some other member of the family affected with this disease.

So one can well imagine the apprehension on the part of the parent, who already has one child with the disease and whose other children are approaching the age in which the first child first showed symptoms of muscular dystrophy.

I think there are few crosses heavier to bear than that of the parent of a child with muscular dystrophy.

If we tried to manage all of these patients with physical therapy and tried to put them into institutions or give them what help was available, the cost would be tremendous. However, I believe that the cost of research will be relatively little. Already we have men trained in basic sciences not engaged in the problem of muscular dystrophy. Already we have a great fund of knowledge of the basic chemical processes of the muscle. These men should be given support so that they may work in the field of muscular dystrophy; and information now available, insofar as normal muscle is concerned, must be applied to the problem of this dread disease.

Perhaps I could go further with questions, rather than with a formal statement.

The CHAIRMAN. Mr. Dolliver.

Mr. DOLLIVER. From what you have said, do I understand that this is a disease of the muscular tissue rather than the nerve tissue?

Dr. MILHORAT. That is right. It is a disease of the muscle in which in few instances the heart participates, but there is no involvement of the nervous system. However, the diagnosis of this disease requires a good knowledge of diseases in which there is muscular wasting subsequent to the disease of the nervous system.

Mr. DOLLIVER. You have indicated by your remarks, then, that this is a sort of a result of a nerve destruction or wasting away?

Dr. MILHORAT. In muscular dystrophy itself, sir, there are many types of muscular atrophy resulting from disease of the nerve, but muscular dystrophy is a disease of the muscle itself. There is no evidence of disease of the nervous system. However, when we say the disease is primarily muscular, we do not mean that the primary metabolic cause is located there. It may be in the muscle or it might be in the liver.

Mr. DOLLIVER. Research has not disclosed the cause of this?

Dr. MILHORAT. That is true. We know nothing about the mechanism of that.

Mr. DOLLIVER. Have there been any hopeful signs that such a specific cause could be isolated?

Dr. MILHORAT. Well, there are several hopeful signs. First, is the general attitude toward hereditary disease. It was formerly thought that if a disease was hereditary we could do very little about treating it. We know, however, that the disease gene or the factors in the chromosomes which give us a particular factor we inherit control a specific physical reaction of the enzyme and that in hereditary disease the enzymatic reaction controlled by the disease gene is disturbed. There is a great deal of experimental evidence to prove that. In fact, hereditary disease may be produced in the lower animals by means of radiation and treatment by mustard gas, though all we know is the site and type of the enzymatic condition. An outstanding example of that is diabetes, of which we know a great deal. Secondly, the muscle has great capacity for regeneration. Muscular dystrophy may be produced by many different experimental means and when you remove these means or adequately treat the animal, structural and functional restoration may be caused so that, if we had an effective treatment for dystrophy, it is not too much to hope that a great deal of recovery would take place in the muscles already damaged. We have seen instances where a great deal of damage has occurred in the muscle

cell and the muscle cell will still be capable of regeneration or improvement.

Mr. DOLLIVER. Is it the belief of the experts in this field generally that some enzyme or some internal secretion is lacking to make the muscle reproduce itself?

Dr. MILHORAT. That is true; yes, sir.

Mr. DOLLIVER. But, they have not isolated that as yet?

Dr. MILHORAT. No. Several paths of research are being followed and some studies with a specific oxidation have been carried on and the results so far are promising, but they cannot be translated into therapeutic terms.

Mr. DOLLIVER. What in general is the incidence of this disease?

Dr. MILHORAT. It is difficult to say. I frankly do not know, although I have been a student of the problem for many years. I believe, however, that the estimate of 100,000 to 200,000 patients made by certain organizations is a reasonable one. Often the disease is not diagnosed and, secondly, in many instances where a diagnosis is made the patient in his dispair and feeling of hopelessness seeks the seclusion of his home and then is lost to the medical profession. We can say, however, that wherever there is a physician or a clinic that displays interest in the disease, many patients appear.

Mr. DOLLIVER. Now, I think I understood you to say that this disease was hereditary? Is that true in all cases?

Dr. MILHORAT. Well, in about 35 percent of the cases we have definite evidence of hereditary transmission and in the other 65 percent we do not know definitively, but there is reason to suppose that in many of these the disease is transmitted and is transmissible, but because of certain circumstances the males or females were spared this disease over a period of a generation. It is very difficult for any of us to look into the history of our forbears and tell definitely what our great-great-grandfather had. We just do not know in many instances.

Mr. DOLLIVER. The thing I was leading up to was this: Did I understand you to say that symptoms similar to this disease can be produced in the lower animals by means of some kind of injection or something of that kind?

Dr. MILHORAT. That is true, sir. One is by the deprivation of a vitamin that is necessary in all species of animals, namely, vitamin E, and by the overdosage of a hormone normally appearing in the body, namely, cortisone, and by the administration of a toxic substance not normally occurring in the body. There might be others to enter the picture, but they are quite indistinguishable as they all look alike, but in all of them there is a great capacity for recovery.

Mr. DOLLIVER. If you stopped administering these three drugs you speak of, the animal will regain its muscles which have deteriorated?

Dr. MILHORAT. I think one can rightfully say that the picture for the patient with muscular dystrophy at this moment is gloomy or that the promise is not bright. Of course, it is the feeling of students of the problem that if a specific treatment were available recovery would be considerable.

Mr. DOLLIVER. Is it your feeling that the great need here is for general and specific research in this field?

Dr. MILHORAT. General and specific research, mainly at fundamental basic levels and also at the clinical level.

Mr. DOLLIVER. That is all, Mr. Chairman.

The CHAIRMAN. Are there any other questions, gentlemen?

Mr. HESELTON. Doctor, it is my understanding that it was not until around 1950 that the association performed a great deal of research in this field?

Dr. MILHORAT. That is true, Mr. Heselton; very little had been done, and up to that time there were only a few projects in existence.

Mr. HESELTON. But the association is active now and as I understand it has been successful in raising very substantial amounts of money?

Dr. MILHORAT. In 1950 from the tears and worries of parents of patients there arose the Muscular Dystrophy Associations of America, and their history I believe is phenomenal. They have given to it the energy and the emotion of parents who are vitally interested in this subject.

Mr. HESELTON. Is diet a factor?

Dr. MILHORAT. That is a very pertinent question and a very significant one. Although I cannot answer it, we do know, however, that the disease may be produced experimentally by changes in diet. I have spoken about vitamin E deficiency, and muscular dystrophy occurs with great frequency among food-deprived animals. Many rations contain less amounts of this substance than others. Some contain less amounts of cod-liver oil, but muscular dystrophy may be produced in animals by large amounts of cod-liver oil, although the content of vitamin E in the body would be otherwise sufficient to maintain the animal in good health.

Mr. HESELTON. What about the personnel—the people who are experts in this field? Is there a sufficient number?

Dr. MILHORAT. There are not many physicians who are trained in the field of muscular dystrophy but there are a great many people engaged in basic research in other lines. For example, this will illustrate my point: One type of dystrophy begins at about age 2 and the patient succumbs at about the age of puberty, and there hardly ever is an involvement of the face.

The contrast here is between the extreme wasting in practically all the muscles of the body and yet there is no effect to the face. In other forms that begin about puberty and progress somewhat more slowly, however, the face is involved very early. This is a problem that interested me for many years. A few weeks ago, in a department of zoology, I found a professor who is studying the effect of certain hormones on various groups of muscles in animals. In rats deprived of the pituitary gland, he found that certain groups of muscles always responded in the same way but other groups of muscles always responded in the opposite way. Here is a promise of an answer to this important problem as to why certain muscle groups are involved, and here is the work being done in a department of zoology by a man who never saw a patient with muscular dystrophy. So, I feel there is a great deal of work that can be done in departments by people who do not know just what the problem is.

Mr. HESELTON. What about the medical schools? Are they giving attention to this particular disease?

Dr. MILHORAT. Relatively little, Mr. Heselton. Naturally at centers like Cornell and here at Georgetown and the Neurological Institute where there are people interested in disease, the patients come

there for study and possible treatment and the students see these patients, but otherwise the students have very little contact with patients with the disease and as a consequence they are unable to make the diagnosis.

Mr. HESELTON. That is all.

Mr. HELLER. Did I understand you to say, Doctor, that there is presently no known cure for this disease?

Dr. MILHORAT. That is correct.

Mr. HELLER. I wanted the record to indicate that.

Dr. MILHORAT. I am very, very sorry to say that that is absolutely true.

Mr. HELLER. One more point that I want in the record and that is this: Would you say, then, or have you testified, that this disease is entirely hereditary? I know you mentioned the figure of 35 percent and then there was some qualified statement made.

Dr. MILHORAT. I would say that in 35 percent of the instances we have definitive evidence of heredity, and of the other 65 percent some presumptive evidence and in other cases there is no evidence whatever of heredity. I might say we have seen instances of muscular dystrophy having its onset in individuals 40 and 50 years of age, but never familial, but progressive, and maybe exceeding progressive, killing the man or the woman within a period of 2 or 3 years, and heredity is not involved.

The CHAIRMAN. Are there any other questions, gentlemen?

Mr. CARLYLE. Doctor, is it agreed by those who have made a careful study of this subject that there is no possible connection between the brain and the spinal cord and the muscular disorders that you speak of?

Dr. MILHORAT. Well, I would say that there is no histological evidence—no structural evidence—that muscular dystrophy arises subsequent to disease of the spinal cord or any other part of the nervous system.

I think one thing that probably should be brought to the attention of the committee—and I am sure the committee is familiar with this—and that is that nature while complex is also very economical and employs certain different types of reactions to attain a certain end. So, we see in the muscle many types of chemical processes observed elsewhere, including the nervous system. So, it follows as night follows day, that if we knew about muscular dystrophy or other diseases of the muscle and the specific chemical processes involved, we would also know a good deal more about other tissue and their disease because there is an economy in nature, and in the muscle we see practically all of the reactions that are seen in all tissue.

The CHAIRMAN. Are there any further questions?

Doctor, I would like you to feel free to add to your testimony whatever you feel would be helpful in presenting the whole subject. I realize you have cooperated to conserve the time of the committee and it might be appropriate if you would include the work that is being done—the extent of it—by the Tall Cedars of Lebanon. The reason I mention that is that it may be a way that we could open up the subject for other organizations to take interest in some particular disease, the same as they are taking in that disease. So, from that standpoint, it might be helpful to have a record made of it in the record of these hearings.

Dr. MILHORAT. At the present time a number of invesigators are studying the various chemical abnormalities that occur in the muscles of patients with muscular dystrophy and of animals in which the disease has been experimentally produced. Significant alterations in the metabolism of several substances already has been demonstrated, but what these alterations are, we do not know whether they are primary or secondary to the muscular-dystrophy process. Moreover, certain alterations in the liver have been demonstrated at least in the experimental animal, and the primary defect might well be in the liver. There is an important concept in biochemistry that now is being applied to the problem of muscular dystrophy and that is the one of dynamic equilibrium. What it means is that the structures in the body are not static; that they are constantly being broken down and rebuilt. Heretofore, we have always looked upon muscular wastage as a mere dissolution of the muscle and the loss of its protein, and yet, work being done in our laboratories indicates that the actual rate of breakdown of the muscle is diminished, which means that the rate of synthesis must be markedly diminishing. That brings us to the process of experiments by means of cortisone. Cortisone we know interferes with the synthesis of protein, so that our attention probably should be on the basis of rebuilding the tissue.

The CHAIRMAN. What I had in mind, Doctor, when I spoke was that I wanted you, as well as the other witnesses who appear here, to feel free to add to your testimony in a voluminous way, if you wish, by building to your statements or submitting reports of your organizations.

Dr. MILHORAT. I see.

The CHAIRMAN. We desire to have as complete a record as possible and more complete than it would be possible if we had to depend upon its being entirely submitted by oral testimony. So, feel perfectly free to do that, and that applies to the others as well to present any additional information that they wish for the record.

Dr. MILHORAT. Thank you very much, Mr. Chairman. My only regret is that I cannot show you a patient crippled with muscular dystrophy.

(The following statement was submitted by Dr. Milhorat:)

MUSCULAR DYSTROPHY

(Prepared for the hearings of the House Committee on Interstate and Foreign Commerce, October 7, 1953, by the Muscular Dystrophy Associations of America, Inc., New York, N. Y.)

Muscular dystrophy is a chronic, noncontagious, progressive disease, manifested by weakness and wasting of the voluntary muscles. Gradually, most of the voluntary muscles of the body are affected and the patient becomes so weak and helpless that he is first confined to a wheelchair and then to his bed. It affects persons of all ages, but more than two-thirds of the victims are children aged 3 to 12 years. There are estimated to be more than 200,000 cases of the disease in the United States, but there are doubtless many thousands more which have not been brought to medical attention since muscular dystrophy is not a reportable disease, and also, due to its very recent recognition by the medical world at large, it is often misdiagnosed as cerebral palsy, rickets, polio, or other more well-known crippling diseases.

The disease causes the death of all the younger patients before they reach maturity, and it is a great contributory factor to the death of the older patients. There is no known treatment to stop or even retard the progress of muscular dystrophy.

In terms of economic loss to the community and the country, although no exact figures have been compiled, the many considerations involved in muscular dystrophy would certainly point to the disease as a severe drain on American resources. Of the adults stricken by muscular dystrophy, only a few are able to maintain jobs which would make them self-supporting. Since the disease makes people progressively less active, those afflicted find themselves increasingly incapacitated as far as finding work they can do, and are increasingly dependent on aid from members of their families or outside people for their everyday needs. In the case of children, parents who might otherwise be more gainfully employed, often have to give up all or part of their work to take care of the needs of their helpless children. And, in families where more than one person is afflicted, the economic status often reaches complete destitution. Cost of wheelchairs, braces, physical therapy, and other measures are items of extreme cost to individuals and their families.

The only reason that costs to Government agencies have not been higher is that heretofore such agencies have not fully assumed obligations to these patients, preferring to use their limited means on diseases for which the prognosis was not so serious as with muscular dystrophy. For example, if muscular dystrophy patients were given adequate physical therapy, the minimum cost for 200,000 patients would be estimated at $2,080,000 per year.

There is a great need for medical research to seek means of alleviating the crippling and fatal effects of muscular dystrophy but limited funds have prohibited any extensive research program until very recently. Basic research has only been started in the last 3 years, as a result of the voluntary contributions to the Muscular Dystrophy Associations of America. Apart from a small number of Government-supported projects, through the National Institute for Neurological Diseases and Blindness, all major work in the study of muscular dystrophy is being supported by this association which has, in the 3 years of its existence, disbursed $682,370 for the establishment and maintenance of 35 separate research projects. (See appendixes A, list of research projects, B, financial report, for specific expenditures.)

Among the preliminary findings revealed so far as a result of patient-history studies, are the characteristics of transmission of muscular dystrophy by heredity. It has been found, for example, that the most common form of such transmission is from a healthy mother to her sons. Second most common is from an afflicted parent to a child of either sex. Most important is the finding that new "dystrophy bearing" families are constantly arising by mutation.

Basic studies on protein constituents and on the chemistry of muscle have yielded fundamental contributions to knowledge of normal muscle. These findings are now beginning to be applied to the study of diseased muscle in muscular dystrophy. Analysis of dystrophic muscle has already shown the presence of defects in important metabolic processes. Whether these are causes or effects of muscular dystrophy must still be investigated.

Muscular dystrophy has been produced in several species of animals by experimental means (by cortisone overdosage, and by vitamin-E deficiency), and investigations are now being made to determine the chemical abnormalities of these forms of the disease to devise effective methods of treatment and to determine in what way these findings may be applied to the disease in human patients.

While the Muscular Dystrophy Associations of America have been interested in every facet of the muscular dystrophy problem, limited means have made it necessary to restrict investigations to the field of chemical analysis of muscle, in which field trained technicians are available to work on a modest basis. Increased funds would be necessary not only to support work in related fields, but also to train personnel for investigation in other areas not yet studied, such as the role of the various hormones in growth functions and maintenance of muscle relation of liver to muscle structure through its synthesis of protein, role of the various elements in muscle integrity, the factors of metabolism of sugar in muscle, of contracture in muscle tendon units, and many other related problems which may hold at least a partial answer to the search for a cure for muscular dystrophy.

Although public contributions to muscular dystrophy research through the muscular dystrophy associations are answering some of the research needs, in the long run, research on a scope wide enough to make a conclusive contribution to the discovery of an effective treatment and cure for muscular dystrophy would be dependent on increased Government aid. Since the voluntary muscles constitute the largest organ in the body and since many of the chemical reactions which occur in muscle occur also in other tissues, it may reasonably be expected

that any fundamental knowledge of muscular dystrophy will lead to significant findings about other parts of the body—and to findings significant to other diseases. The effect of such information on the alleviation of human suffering and economic loss caused not only by muscular dystrophy, but by other conditions as well, is incalculable.

APPENDIX A

The following research programs are being financially supported by the Muscular Dystrophy Associations of America, Inc., as of August 1, 1953:

Institution	Title of research and investigator	Total funds allocated by MDAA since commencement of project
New York Hospital, Cornell Medical College, New York.	Investigation into the Pathogenesis of Progressive Muscular Dystrophy.[1] Dr. Ade T. Milhorat.	$290,358
	Studies on the Nature and Pathogenesis of Muscular Degeneration in Cortisone-Treated Rabbits. Dr. John Taylor Ellis.	8,856
University of Paris, France	Studies on the Biochemistry of Muscle in Progressive Muscular Dystrophy. Dr. Georges Schapira.	18,500
Institute for Muscle Research, Woods Hole, Mass.	Studies in Relation of Electric Charge-Distribution in Muscle Fibers and in Actomyosin to Muscular Contraction. Dr. Albert Szent-Gyorgyi.	60,000
New York Medical College, Flower and 5th Ave. Hospital, New York.	Electromyographic Studies on Muscular Dystrophy. Dr. Arthur S. Abramson.	1,750
University of Washington, Seattle.	Investigation of Structure and Cytochemistry of Normal and Degenerating Muscle. Dr. H. Stanley Bennett.	14,364
University of Buffalo and Edward J. Meyer Memorial Hospital, Buffalo, N. Y.	Studies in Ventilatory Force and Quantitative Measurement of Diaphragmatic Strength in Health and in the Presence of Muscle Disease. Dr. Howard G. Dayman.	3,700
Massachusetts General Hospital, Boston, Mass.	Paper-Electrophoretic Studies on Muscle Proteins. Dr. John Gergely.	4,331
Washington University, St. Louis, Mo.	Biochemical Investigation of Muscular Dystrophy. Dr. Edwin F. Gildea.	20,000
University of Wisconsin, Madison, Wis.	The Relation of Structure on the Myo-Fibrillar and Mitochondrial Systems of Normal and Dystrophic Skeletal Muscle. Dr. John W. Harman.	18,387
Alabama Polytechnic Institute	Relation of Diet to the Production and Cure of Muscular Dystrophy in Laboratory Animals. Dr. Edwin L. Hove.	10,280
University of Arkansas	The Role of Nucleic Acid in Muscular Dystrophy. Dr. William K. Jordan.	12,866
University of Illinois	Carnitine Metabolism in Muscular Dystrophy. Dr. Robert M. Kark.	5,000
University of California	A Study of Muscle Disorders by Means of Exchangeable Radioactive Potassium Determination. Dr. A. S. Rose.	8,164
Bird S. Coler Hospital, New York Medical College.	Proposed Training Program in Physical Medicine and Rehabilitation of Muscular Dystrophy Patients. Dr. Jerome S. Tobis.	25,000
University of Texas	The Study of Metabolic Patterns of Muscular Dystrophy Patients. Dr. Roger J. Williams.	1,700
University of Utah	Preparation of Laboratory Space for the Study of Hereditary and Metabolic Disorders. Dr. Max M. Wintrobe.	8,000
University of Iowa	Studies on the Metabolic Origin of Carnosine and Anserine and their Possible Physiological Roles in Muscle. Dr. Theodore Winnick and Dr. Harry M. Hines.	11,880
Worcester Foundation for experimental Biology, Massachusetts.	The Effect of Steroid Hormones on the Incuration of Tocopherol with Skeletal Muscle. Dr. Harris Rosenkrantz.	10,190
University of Colorado	Chemical Analysis of Developing Muscle Tissue. Dr. Heinz Herrmann.	8,343
	Electron Microscopic Studies of Neuromuscular Relationships under Normal and Pathologic Conditions. Dr. A. R. Buchanan and Dr. Verne Van Breemen.	7,722

[1] This is by far the most extensive research program and includes a metabolism ward, dietary kitchen, extensive laboratory facilities, psychiatrist, physical chemist, and a large staff of investigators and technicians.

Institution	Title of research and investigator	Total funds allocated by MDAA since commencement of project
Western Reserve University, Cleveland, Ohio.	Study of the Muscle Enzymes in Progressive Muscular Dystrophy. Dr. Paul J. Vignos, Jr.	$4,860
University of Pittsburgh	Synthesis and Metabolism of Glycocyamine. Dr. Robert E. Olson.	9,330
Children's Hospital of Pittsburgh	Muscular Dystrophy Survey Studies, Preliminary to Trials of Purified Growth Hormone. Dr. T. S. Danowski.	8,316
Columbia University, New York	Studies of Surface-spread Actomyesin Fibers. Dr. Teru Hayashi.	3,240
	Interaction Between Ions and Muscle Proteins. Dr. David Machmansohn.	12,474
University of Rochester, New York	Structural and Metabolic Studies on Degeneration and Repair of Skeletal Muscle in Experimental Muscular Dystrophy. Dr. Karl E. Mason.	16,135
National Institute of Neurological Diseases and Blindness, Washington, D. C.	Potassium Exchange, Actomyesin Tensile Strength, Metabolic Changes and Endocrinological Studies on a Series of Neuromuscular Cases.	1,714
Johns Hopkins Hospital, Baltimore, Md.	Relation of Vitamin E to Glycolysis in Skeletal Muscle. Dr. Kenneth L. Zierler.	8,087

The following projects, which received our financial support in the past, have now been completed:

Institution	Title of research and investigator	Total funds allocated by MDAA since commencement of project
Duke University, Durham, North Carolina.	Micromethods in the Investigation of Muscular Metabolism. Dr. W. F. H. N. Mommaerts.	$4,104
University of Pittsburgh	Studies of Metabolism of Cations, Anions and of Nitrogen in Muscular Dystrophy. Dr. A. S. Danowski.	9,573
University of Colorado	Potassium Exchange in Neuromuscular Disorders. Dr. G. Milton Shy.	6,858
University of Rochester	Histochemistry of Dystrophic Muscle in Man and Laboratory Animals. Dr. Karl E. Mason.	2,052
	Studies on the Effects of Hormonal Influences on Experimental Muscular Dystrophy, and the Protein Fractions of Dystrophic Muscle. Dr. Karl E. Mason.	11,173
Studies in Physical Therapy as it may be applied to Muscular Dystrophy, under the direction of Dr. A. S. Abramson, chief of physical medicine rehabilitation service, Veterans' Administration Hospital, Bronx, N. Y.		28,321
Fellowship: Cornell University Medical College, New York.	Fellowship known as Muscular Dystrophy Associations of America, Inc., Fellowship for the study of emotional factors in muscular diseases under the direction of Dr. Marie Louise Schoelly, assistant in psychiatry.	3,000

APPENDIX B

Statement of income and disbursements for the fiscal years ended Mar. 31, 1952 and 1953

	1953	1952
Income:		
Chapter remittances	$370,002.24	$168,822.74
Contributions	173,593.69	63,809.94
Special events—net	58,314.53	27,803.76
Other	403.00	1,056.50
Total	602,313.46	261,492.94
Disbursements:		
Research	297,533.34	101,913.48
Diagnostic services, therapy	19,575.00	8,746.25
Education and publicity	61,471.56	45,923.91
Chapter services	23,610.07	8,144.46
Fund raising	32,383.49	38,113.46
Administrative	43,674.51	24,433.39
Total	478,247.97	227,274.95
Increase in equity for period	124,065.49	34,217.99

Dr. BAILEY. May I interrupt a moment, Mr. Chairman, and include the work being done in muscular dystrophy at the National Institute of Neurological Diseases and Blindness? We have a rather large project in muscular dystrophy at the present time. Would you like for that to be included in the list for the record?

The CHAIRMAN. Yes, sir; we would be glad to have it.

(The materials follow:)

NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS—STATEMENT ON RESEARCH PROGRAM IN MUSCULAR DYSTROPHY

The National Institute of Neurological Diseases and Blindness has concentrated its medical neurological research program during the fiscal year 1954 on that group of disorders generally known as neuromuscular. Such disorders are usually grouped together in neurologic research, inasmuch as a nerve cell in the spinal cord and its nerve, and the muscle fibers that are attached to this nerve are generally considered as a single structural and functional unit which carries the name "lower motor neuron." Thus, a disorder anywhere along this chain, whether in the nerve cell, the nerve, or the muscle, may cause a wasting or weakness of muscle, and it is only by understanding the functional anatomy of the entire unit that one can differentiate and investigate the various disorders.

This group of neuromuscular disorders comprises muscular dystrophy, myositis and dermatomyositis, myotonia, myasthenia gravis and amyotrophic lateral sclerosis. The most promising research in these disorders lies in understanding the pathophysiological and chemical factors underlying the disease. This institute has approached this problem by organizing a clinical research team consisting of scientists qualified in neuromuscular chemistry, radioactive isotope techniques and personnel trained in electronic nerve and muscle conduction, and finally, personnel trained in the application of pharmacological agents.

Chemical studies will be performed on the primary muscle proteins, and their formation, particularly myosin and actin, which, when reacting with a chemical called adenosine-triphosphate, forms one of the bases of neuromuscular contraction. Studies of the effect of potassium on such mechanisms will be analyzed by the use of radioactive potassium (K–42). All of these studies will be correlated with electrical responses, and the pathology of the disorder will be controlled by adequate examination of biopsied muscle.

Though many of the investigations outlined above may be done in basic laboratories, the clinical implication of the findings necessitates a research team in which clinical neurologists with laboratory training collaborate with laboratory researchers. It is only by such cross-fertilization that the importance of such findings as might be obtained can be correlated rapidly with the diseases of the neuromuscular system.

The CHAIRMAN. In connection with what I have said about one organization, my attention is called to the fact that the fraternal Order of Eagles has contributed over $400,000 to the Damon Runyon Fund, and the National Junior Chamber of Commerce, or units throughout the Nation, are also engaged in raising funds for that cancer activity, under the name of the Damon Runyon Fund, all of which illustrates that there is a possibility of increasing public interest in these matters to a point where it can prove most helpful to you who are engaged in research and in special studies.

My attention has now been called to the fact that the New York State Federation of Women's Clubs has adopted multiple sclerosis as a public health project of that organization for the year 1953–54.

All of this is very gratifying, indeed, and it goes to illustrate what I have visualized as a possibility if we can get the thing moving the way we would like.

Dr. Traeger, what else do you have to offer?

Dr. TRAEGER. I would like to ask a question, Mr. Chairman, about the plans for the hearings. The agenda is still incomplete and there are other people who want to be heard and who should be heard. May I be informed as to your plans? Shall we continue this afternoon or try to finish this morning?

The CHAIRMAN. How many witnesses do you have in mind?

Dr. TREAGER. Well, I have at least six witnesses.

The CHAIRMAN. Will you give me the subject on which they will appear, as well as their names?

Dr. TREAGER. Well, there will be Dr. Brooks and Dr. Van Meter from the cerebral palsy group; Mr. Owen and myself from multiple sclerosis, and then the other neurological disorders which will be taken up by Dr. Bailey, and the statement of the research and training program of the national institute by Dr. Bailey.

The CHAIRMAN. During the noon recess I would appreciate it if you would sort of get together and get the different witnesses lined up, so to speak, in a way that will conserve our time for the reason that we have many witnesses appearing today also on the subject of blindness and the subject of diabetes. We should like to finish our program today. So, if you can help in conserving the time of the committee, it will enable us to cover the whole field that we have in mind today, and I will ask the discussion leaders on the program of blindness, one of whom I understand will be Dr. Johnson of the University Hospital at Cleveland, Ohio, to also have this in mind and also the doctors who will appear in the discussion for the American Diabetes Association.

We have a rather ambitious program today, larger than usual, and it will require that we give a lot of thought as to how to proceed.

We will adjourn for an hour and I would appreciate it if everyone can be here as promptly as possible so we will lose no time.

AFTERNOON SESSION

(At the expiration of the recess, at 1:45 p. m., the committee reconvened.)

The CHAIRMAN. The committee will come to order.

Dr. Traeger, I wonder if it would be possible for you to agree upon a period of time in view of the fact that our schedule is so full today,

and seemingly so tomorrow. So there is no opportunity to carry over and we do want to hear everybody that is here to be heard on any of these subjects.

Now, we are approaching 2 o'clock. Would it be possible for you to so disperse or limit your speakers that we could finish the subjects that you are interested in by quarter of 3?

Dr. TRAEGER. Yes, sir.

The CHAIRMAN. Should I have said half past 2?

Dr. TRAEGER. We will do our best, but I will probably have to swindle a couple of minutes more.

The CHAIRMAN. In fact, I regret to say even a quarter of 3, but it is only in fairness to all who are here today. We were not aware of the fact that so many others would be here.

Dr. TRAEGER. We will try and limit the presentation of the various categories to approximately 10 minutes.

We will call on Dr. Glidden Brooks from cerebral palsy, please, and see if you can abbreviate your remarks, Doctor.

STATEMENT OF DR. GLIDDEN L. BROOKS, MEDICAL DIRECTOR, UNITED CEREBRAL PALSY ASSOCIATION

Dr. BROOKS. I shall be glad to abbreviate my remarks.

If the committee would direct their attention to the prepared statement which I have made, I would appreciate it if the full statement would appear as a part of the record.

The CHAIRMAN. I want that to be understood by all of the witnesses that any prepared statement that you have will be made part of the record the same as if you had delivered every portion of it, and I am assuming, therefore, you will be giving us a summary of the general statement. I want the record to be as complete as we can make it.

Dr. TRAEGER. Does that include, Mr. Chairman, supplementary evidence which we would like to send in within a day or two?

The CHAIRMAN. Yes, sir; indeed

You will have to become pretty strong in regard to the length of your statement before it will be beyond what I am willing to see get in the record. I am very anxious to build the record up and make it as full and complete as possible.

(The full prepared statement by Dr. Brooks follows:)

GENERAL STATEMENT

Mr. Chairman and members of the committee, I am Dr. Glidden L. Brooks, of New York City, N. Y., medical director of United Cerebral Palsy Associations, Inc. I am honored to be able to speak before your committee concerning the medical aspect of cerebral palsy and its challenge.

Cerebral palsy is a complex and highly variable disturbance of function which is the outward reflection of damage to the brain. The most prominent reflection in disturbance of motion, although other functions mediated in the brain may also be affected.

The complexity of cerebral palsy is a reflection of the complexity of the brain. Essentially, what basic knowledge we have about cerebral palsy is limited by what we know about the brain, and, therefore the vast amount we must yet learn about cerebral palsy is conditioned by what we have yet to find out about the brain—how it functions and how it responds to and recovers from a variety of damage-producing situations.

The human brain is a highly complicated and little understood organ. It is the seat of reason, of perception—of those qualities that distinguish man from the lower animals.

The brain—to give a somewhat oversimplified description—is made up of nerve cells. Each nerve cell has long strands which, somewhat like wires, connect it to numerous other nerve cells, and by way of the cranial nerves and the spinal cord to all parts of the body, such as muscles.

The majority of these nerve cells are arranged in layers around the outside of the brain, and different centers of the brain control different parts or functions of the body.

Collections of nerve cells in other parts of the brain are important in helping to stabilize, coordinate, and otherwise influence this control by adding impulses to the whole "brain message" which starts in the cerebrum and ends with the performance of a body function.

A significant fact about nerve cells is that, once destroyed, they are not replaced. Thus, when any part of the brain is damaged, the bodily functions associated with that part of the brain are permanently impaired unless other parts of the brain can be trained to substitute for this function. In addition to functions of motion, activities of the brain which have to do with sensation, or indeed with power to reason, may be affected by injury to the nerve tissues.

Just what this impairment may be depends on the location of the damage, the number of cells destroyed, and many other factors. Such damage can be caused by any type of injury, or by failure of the brain to develop before birth.

Most adults have learned as children to eat, walk, talk, and perform countless functions of everyday living quite naturally and almost automatically. This is possible because normal people, early in childhood, establish delicately balanced control of their muscles so that they work together smoothly and efficiently. A person with cerebral palsy has suffered damage to the mechanisms which provide this delicate control; therefore, as a child, it has been impossible or, at best, painfully difficult for him to learn to do even the most simple acts which the rest of us take for granted. For example, in attempting to hold a pencil up as I am now doing, his motions are strained and awkward. He may overreach it, be unable to grasp it and unable to hold it still in any useful position. The same imbalance may characterize the ability to walk or even to stand or sit up. One of the most unfortunate difficulties stems from difficulty with muscles of the throat and tongue so that efforts to talk result in little more than grunts and unattractive noises accompanied by grimaces and drooling.

The appearance of a person so afflicted too often leads the uninformed observer to the conclusion that the cerebral palsied individual is feeble-minded. This affords an unthinkable injustice to the large numbers of cerebral palsied individuals who are intellectually normal or superior. It is true, of course, that a sizable number of cerebral palsied individuals do have less than normal intellectual capacity. In the past, individuals have been mistakenly placed in the feebleminded group because they had unrecognized disturbances of perception. They were deaf, they were partially blind or had other deep-seated difficulties in seeing the world as the normal person sees it. When these difficulties are recognized and compensated for, the stigma of feeblemindedness has been lifted.

Some 200,000 children have cerebral palsy. With proper care, a high percentage of them can live useful and independent lives. Cost of such treatment and training is extremely high, and few families can afford it. Only a few States have been able to take even first steps toward developing programs for these children.

Thus, we see that the challenge of cerebral palsy is highly complex. It is also sizable—according to the best estimates, there are more than half a million cerebral palsied children and adults in the United States.

It is a challenge to research scientists to increase our knowledge about cerebral palsy, for the limits of our knowledge of this condition ultimately determine what we can do for it.

Physicians are faced with a twofold challenge. Eventually, they must develop ways of preventing cerebral palsy. And right now they must help the palsied overcome their handicaps, for while the destroyed brain cells cannot be restored, the palsied can be trained to use their abilities to compensate for their disabilities.

Helping to provide such a design for living requires special education, therapies, and loving and understanding care in the home. That is the challenge to educators, therapists, and parents.

And finally, it is a challenge to the general public to help provided the four requirements in meeting this challenge:

(*a*) Knowledge and understanding of cerebral palsy.

(*b*) Effective lay and professional leadership.

(*c*) A program of service—a carefully planned development of all our resources which can be brought to bear on the problem of cerebral palsy.

(*d*) The money which alone can make these essentials possible.

Much has already been done to help provide these requirements. As is the American pattern , a group of citizens concerned with this problem organized a voluntary health agency to press a united attack on cerebral palsy. This agency is United Cerebral Palsy and its many affiliates.

In general, the aims of this organization are:

1. To direct and unify an overall, long-range attack on the entire problem of cerebral palsy.
2. To help provide needed treatment, care, and education for the palsied.
3. To help the palsied to social adjustment and the development of a practical design for living.
4. To train the cerebral palsied for employment and help them find jobs.
5. To foster and direct research into the causes and treatment of cerebral palsy.
6. To help solve the critical shortage of specialists working with the cerebral palsied.
7. To give guidance to parents of palsied children to help them solve their own and their children's problems.
8. To encourage legislation designed to help the palsied.
9. To make available information valuable to persons concerned in the care, treatment, and education of the cerebral palsied.
10. To promote public understanding of the problems and needs of the palsied.
11. To raise funds for all these purposes.

The ultimate aim of United Cerebral Palsy and its affiliates is the eventual subjugation of cerebral palsy, which has mystified mankind for centuries.

In the fight against cerebral palsy, there are now increasing provisions being made for much-needed diagnosis, treatment, care, education, and other assistance for as many as possible of the cerebral palsied in their communities. Today, United Cerebral Palsy affiliates around the country are working diligently, on such programs of assistance. As this effort continues to grow, we have hopes for a much brighter outlook than was presented to you in the figures from Connecticut cited this morning.

However, we know that this individual help will not solve the real problem of cerebral palsy. It is obvious that the eventual conquest will come in the same manner that has proved successful with other health foes—organized research to discover:

1. The cause or causes.
2. Better methods or techniques of treatment.
3. Probable, possible, or even partial preventives.
4. Palliatives, remedial procedures and perhaps someday a cure for some types of damage.

This is a mammoth undertaking, much too big to be financed by any local affiliate or group or single national voluntary organization. To be effective, however, it must be pursued on the national level, and to this end, United Cerebral Palsy affiliates from all parts of the country alocate a certain percentage of their funds to make possible this important national research program. In United Cerebral Palsy's first 4 years, these grants for research and training of personnel have totaled $1,097,000 paid or budgeted out of this year's receipts.

In the recent past much has been learned about cerebral palsy that is of great value. We are indebted to many members of the medical profession and allied fields for a body of knowledge that provides a good basis for future progress. United Cerebral Palsy is building upon this base by developing an organized program of research in the field.

Medical leaders recognize that the several solutions to the manifold problems of cerebral palsy must rest upon the contributions of men and women expert in the techniques of the basic sciences and in the application of the results of such fundamental studies to the patient with cerebral palsy. For centuries physicians faced with the many unsolved questions in the field of cerebral palsy worked literally in the dark. The great advances in the specialities of medicine made possible by contributions from laboratories where the techniques of physics and chemistry are applied so effectively to the disciplines of physiology, biochemistry, pharmacodynamics, organic and biophysical chemistry indicate that there are possibilities for progress in cerebral palsy too.

It was with the purpose of making possible the application of these great advances to our own problems that the research advisory board of the United Cerebral Palsy Associations organized its national research program. Beginning with a broad definition which includes the nature and consequences of damage to the central system, the research advisory board sought to state clearly the questions for which answers must be obtained. Believing that positive action was essential, the board enlisted the aid of individuals or teams of specialists working in the hospital, laboratory, and unversity centers selecting not only men of established reputation working in magnificently equipped institutions, but also men of promise with ideas and a desire to follow leads of importance to them. The great emphasis upon means of preventing cerebral palsy has not excluded all possible efforts in behalf of the cerebral palsied who are with us today. New directions of research have included studies of circulation, nutrition, and precise function in the various parts of the brain. Further efforts proceed in the direction of repair of the consequences of damaged areas in the brain by surgical intervention, the use of chemical or of radiation therapy. A few of the major efforts may be listed:

Damage to the brain associated with birth—is being investigated at Columbia Neurological Institute of New York, the University of California, the Harvard Medical School and other centers.

Surgical reorganization of the brain—to make healthy areas of the brain assume the function of those portions which are damaged or destroyed—is under investigation in ingeniously contrived experiments at the University of Utah.

The effects of radiation, chemicals, poisons, and infectious agents upon the developing brain as possible causes of cerebral palsy are being analyzed at the New England Deaconess Hospital in Boston.

Chemotherapy with a newly synthesized chemical compound to relieve muscle spasm—one of the main disturbances in cerebral palsy—is a part of the research program in the University of Rochester.

Brain tissue regeneration—fundamental studies in a field which has assumed great importance only recently—is being studied with reference to nucleic acids in nerve cells at the University of Arkansas.

Studies on the life history of cerebral palsy by one of the pioneer workers in cerebral palsy, Dr. Bronson Crothers, are being conducted at the Children's Medical Center in Boston.

Fundamental approaches in neurophysiology, pathology, and anatomy are being studied at Mexico City, Philadelphia, and Boston.

Studies in neuropharmacology in Chicago, and in basic physiology in Los Angeles are included in the increasingly large program of research selected by the research council in the last 3 years.

It is, of course, impossible to predict which of the many approaches to the problems of cerebral palsy will produce results either in terms of clinical improvement, effective prevention, or basic understanding of the underlying disorders. It should be emphasized repeatedly that no single "miracle drug," no one form of treatment, nor any one piece of research may be expected to provide a single solution for the entire problem. Even though the final objectives have not been achieved, research has already done much to improve treatment and to add to our understanding of means of prevention.

The shortage of trained workers is another one of the reasons why children must go without care. As a Nation, we need many thousands more doctors, nurses, medical social workers, child-welfare workers, and other professional people especially trained in the care of children. We need many trained assistants to help relieve the load on specialists.

Far greater sums for research than can be provided by any voluntary agency are urgently needed. For these we look to the federally financed National Institutes of Health.

In the month of August 1952, the Albert and Mary Lasker Foundation prepared a chart showing the distribution of certain categories of funds by United States Public Health Service by disease category and type of activity or support. These are cumulative totals for the fiscal years 1945 to 1953. The attached chart pictures in vivid fashion the unfortunate neglect of neurology and blindness in the National Institutes of Health.

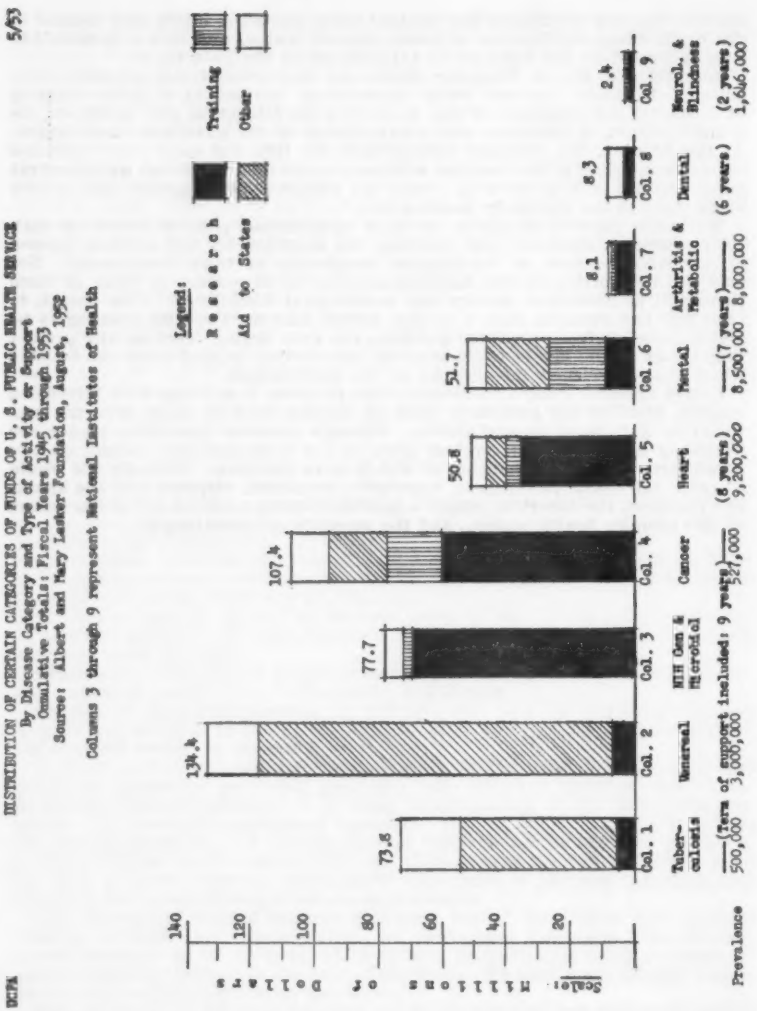
The budget for the National Institute for Neurological Diseases and Blindness for the fiscal year 1953–54 has been fixed by the Congress in the the sum of $4,500,000, a substantial increase over the allotment of $1,900,000 for the previous fiscal year. Out of the fiscal funds for 1953, the National Institute

allotted the sum of $296,924 for cerebral palsy including injury and disease to the brain where dysfunction is predominantly motor, and this allotment has been increased by the Institute to $418,756 out of the 1954 funds.

Recently Mr. Ernest Fleischer, vocational and occupational guidance consultant of United Cerebral Palsy Association, testified at a public hearing of a special subcommittee of the Committee on Education and Labor on the general subject of assistance and rehabilitation of the physically handicapped. At this hearing, Mr. Fleischer testified that the time has come when Congress should be apprised of the fact that adolescents and adults afflicted with cerebral palsy are not in a position to obtain the comprehensive service that is now being given to the physically handicapped.

While the physical disability of other handicapped persons interferes with their prospects, guidance, and training, the situation for the cerebral palsied is intensified because of the multiple complexity of their involvement. Not only are they orthopedically handicapped, but in 90 percent or more of them there will be attendant sensory and neurological disabilities. This means, to take just one example, that a palsied person may need special training to be able to speak before vocational guidance can even begin. That is why present limitations in the act in effect exclude the cerebral palsied from the benefits which Congress clearly intended for all the handicapped.

United Cerebral Palsy's public-education program is striving, with increasing success, to offset the prejudices built up against cerebral palsy over the centuries as a form of mental illness. Through constant repetition, people are beginning to realize that cerebral palsy is not a disease, not contagious, not hereditary, and not a condition of which to be ashamed. Through the media of radio, television, newspapers, magazines, brochures, displays, and the speaker's platform, the American public is gradually being made aware of the nature of this complex health problem and the necessity of combating it.



Dr. BROOKS. I would like the committee to consider what I have to say against the backdrop of Dr. Traeger's testimony this morning, which was an excellent introduction to the subject. I shall try to outline for you the problem of cerebral palsy within the framework of a voluntary organization attempting to do something about it.

First of all, what is cerebral palsy? Cerebral palsy is a complex and highly variable disturbance of function which is the outward reflection of damage to the brain. The most prominent is the disturbance of motion, although other functions mediated in the brain may also be affected.

The complexity of cerebral palsy is a reflection of the complexity of the brain. Essentially, what basic knowledge we have about cerebral palsy is limited by what we know about the brain, and therefore the vast amount we must learn about cerebral palsy is conditioned by what we have yet to find out about the brain—how it functions and how it responds and recovers from a variety of damage-producing situations.

Most adults have learned as children to eat, walk, talk, and perform countless functions of everyday living quite naturally and almost automatically. That sort of movement is possible because normal people, early in childhood, establish delicately balanced control of their muscles so that they work together smoothly and efficiently. A person with cerebral palsy has suffered damage to the mechanisms which provide this delicate control; therefore, as a child, it has been impossible or, at best, painfully difficult for him to learn to do even the most simple acts which the rest of us take for granted.

For example, in attempting to hold a pencil up, as I am now doing, his motions are strained and awkward. He may overreach it, be unable to grasp it and unable to hold it still in any useful position. The same imbalance may characterize the ability to walk or even to stand or sit up. One of the most unfortunate difficulties stems from difficulty with muscles of the throat and tongue so that efforts to talk result in little more than grunts and unattractive noises accompanied by grimaces and drooling. When he talks, it is with great effort, and he is unintelligible and grunts and drools, and otherwise presents an unattractive appearance.

The appearance of a person so afflicted too often leads the uninformed observer to the conclusion that the cerebral palsied individual is feebleminded. This interpretation affords an unthinkable injustice to the large number of cerebral palsied individuals who are intellectually normal or superior. It is true, of course, that a sizable number of cerebral palsied individuals do have less than normal intellectual capacity. In the past, individuals have been mistakenly placed in the feebleminded group because they had had unrecognized disturbances of perception. They were deaf, they were partially blind or had other deep-seated difficulties in seeing the world as the normal person sees it. When these difficulties can be recognized and compensated for then the stigma of feeblemindedness can be lifted from these people.

About 200,000 children in this country, according to the best estimates, have cerebral palsy. It is being demonstrated that with proper care a much higher percentage of them can live useful and competent lives than formerly thought possible. However, the cost of treating and training them so this is possible is extremely high and only a few families can afford it. Only a few States have taken noticeable steps toward providing it at State expense.

The challenge of cerebral palsy is a challenge to research scientists such as you have heard from this morning. The limits of our knowledge of cerebral palsy are the limits of our scientific knowledge. Therefore, No. 1 in priority, if the gentleman wishes, I would say would be research. Physicians are faced with a twofold challenge in this area. Eventually research must be directed toward preventing cerebral palsy, since I am sure it was made clear to you that it is very unlikely for a cure to be turned up for anything with as many different causes and phases as cerebral palsy.

Now we must develop increasingly useful methods of helping the cerebral palsied overcome their handicap. In other words, we must train the palsied to use their abilities to compensate for their disability.

Helping to do this requires specialized education, specialized occupational therapy, physiotherapy, understanding and care at the home. It has been pointed out already that these people were outcasts at one time. Even the parents of such children need to be educated as to the attitude they should take toward their own children. That is a challenge which goes to parents and educators and therapists.

Finally, there is a challenge to the general public to provide what we have listed as four requirements needed to do this.

One is a knowledge and understanding of cerebral palsy. We cannot do anything about it if we do not know anything about it.

Second, effective lay and professional leadership. That begins with leadership in the research area, which we have heard so much about this morning, and goes all the way down to leadership at the level of the general public.

We need a carefully planned program of service because this training process is so expensive and time consuming, and our resources are necessarily limited. We must husband our resources, and carefully planned and carefully developed programs are necessary.

The last of the four things is money, and we need a great deal of it.

Much has already been done to help provide these requirements. As is the American pattern, a group of scientists concerned with this problem have organized a voluntary health agency to press a united attack on cerebral palsy. This agency is United Cerebral Palsy, and its many affiliates. In general, the aims of this organization are to focus solely upon cerebral palsy and to mobilize all the resources of the community.

In the case of the national organization, it means the country; in the case of local organizations, it means the community from which they derive their support. They should mobilize all the resources of the community, resources already there and not being used and potential resources that may be developed—mobilize all the resources, real or potential, that can be brought to bear upon this problem. That is what we mean by planning.

The alternate aim of United Cerebral Palsy and its affiliates is the eventual subjugation of cerebral palsy, which has mystified mankind for centuries.

In this fight against cerebral palsy there are now extensive provisions being made for much-needed diagnosis, treatment, care, education, and other assistance for as many as possible of the cerebral palsied and their community. It is encouraging to see what is going on.

The evidence which has been submitted to you, but not read this morning, points out that there is great need for much more activity in most States. Today United Cerebral Palsy affiliates around the country are working diligently on such programs of assistance, and as their efforts continue to grow, we have hopes of a much brighter outlook than we would be able to present to you today. However, we know that this helping of the individual cerebral palsied, important as it is, will not solve the real problem. It is obvious that the eventual

conquest will come in the same manner that has proved successful with our health foes—organized research to discover, first, the cause or the causes; second, better methods of technique of treatment; third, probable, possible, or even partial preventives, palliatives, remedial procedures, and perhaps some day a cure of some types of damage.

This is a mammoth undertaking, much too big to be financed by any local affiliate or group or single national voluntary organization. To be at all effective, however, it must be pursued on the national level and to this end United Cerebral Palsy affiliates from all parts of the country allocated a percentage of their funds to make possible the support of medical research at the national level.

In United Cerebral Palsy's first 4 years the grants for research and training have totaled $1,097,000 paid or budgeted out of this year's receipts.

The medical leaders recognize that the several solutions to the manifold problems of cerebral palsy must rest upon the contributions of men and women expert in the technique of the basic sciences and in the application of the results of such fundamental studies to the patient with cerebral palsy.

For centuries physicians, faced with many unsolved questions in the field of cerebral palsy, worked utterly in the dark, and you got this morning a little insight as to just how dark the early history of these neurological disorders is. The great advances in the specialties of medicine, which made possible contributions from laboratories where the techniques of physics and chemistry are applied so effectively to the disciplines of physiology, biochemistry, pharmacodynamics, organic and biophysical chemistry, indicate that there are possibilities for progress in cerebral palsy also.

It was the purpose of making possible the application of these great advances to our own problems that the research advisory board of the United Cerebral Palsy Association organized its national research program. Believing that positive action was necessary, the board enlisted individuals or teams of specialties, working in the hospital, laboratory, and university centers, selecting not only men of established reputation working in magnificently equipped institutions but also men of promise with ideas and a desire to follow leads of importance to them. The great emphasis upon means of preventing cerebral palsy has not excluded all possible efforts in behalf of the cerebral palsied who are with us today. New directions of research have included studies of circulation, nutrition, and precise functions in the various parts of the brain. Further efforts proceed in the direction of repair of the consequences of damaged areas in the brain by surgical intervention, the use of chemical or of radiation therapy.

We have listed in our report a brief summary and examples of the sort of research that we are supporting. In the interest of time I will not read that. It is of course impossible to predict which of these many approaches to the problem of cerebral palsy will produce results, even in terms of clinical improvement, effective prevention or basic understanding of the underlying disorders. It should be emphasized repeatedly in cerebral palsy there is no single miracle drug, no one form of treatment, nor any one piece of research that may be expected to provide a single solution of the entire problem.

Another problem is the shortage of trained workers. As a nation we need many thousands more doctors, nurses, medical social workers,

child welfare workers, and other professional people especially trained in the care of children. We need many trained assistants to help relieve the load on specialists. For that matter, we need them for the care and rehabilitation of adults with cerebral palsy. For this reason we are also providing training grants as a part of our overall research program in an attempt to provide assistance to people who wish to be trained in the various techniques of the attack on cerebral palsy.

Far greater sums for research than can be provided by any voluntary agency are urgently needed. For these we look to the federally financed National Institutes of Health.

The budget for the National Institute for Neurological Diseases and Blindness for this year has been fixed by the Congress at $4,500,000, which is a substantial increase over the $1,900,000 for the previous year. Out of these funds for 1953 the National Institute allotted the sum of $296,924 for cerebral palsy, including injury and disease to the brain where this function is predominantly motor, and this allotment has been increased by the Institute to $418,756.

The problem of employment of physically handicapped, and especially of cerebral palsied, is one which has a direct bearing on the national economy, which Mr. Van Meter will point out as we go on. Very little has been done about this. United Cerebral Palsy Associations is allocating some of its funds to developing active and increasing knowledge and interest in this area.

United Cerebral Palsy's public education program is striving with increasing success to offset the prejudices built up against cerebral palsied over the century as a form of mental illness. Through constant repetition, people are beginning to realize that cerebral palsy is not a disease, not contagious, not hereditary, and not a condition of which to be ashamed. Through the media of radio, television, newspapers, magazines, brochures, displays, and the speaker's platform, the American public is gradually being made aware of the nature of this complex health problem and the necessity of combating it.

Mr. HESELTON. You have a chart showing the funds raised and allocated by voluntary agencies. It seems that is a quite wide variation between the amount that the society is able to obtain and the amount assigned for research. I assume that is because of a lack of personnel to carry out research; is that right?

Dr. BROOKS. That is not so. The discrepancy is so, and the reason for it is that this organization is not organized solely to support research. Research is only a part of our program. Seventy-five percent of the money which is raised stays in the local community to provide these services to cerebral-palsied people that I alluded to. Twenty-five percent of it comes to the national and only a part of that is available for research. Mr. Van Meter has some figures which would further elucidate that.

Mr. PRIEST. Do you have adequate reports to indicate this 75 percent of the funds that remain in the local communities produce very favorable results?

Dr. BROOKS. I think the fair answer to that is that we do not have as adequate reports as we would like. The reasons are two: First, we are a young organization and still developing our communications so that some of our affiliates are literally doing things we do not know about. That is getting to be less and less so.

The second is that results in any form of treatment or training of the cerebral palsied are painfully slow and we can only look back over a long period of time. There is a bit of our research work that we are supporting that we have great hopes for. Dr. Carruthers, one of the pioneers in cerebral palsy, is reviewing a 20-year experience using, incidentally, motion-picture techniques. He started out taking moving pictures of his patients, and he now has them from childhood to adulthood, and we will get some more answers to the sort of questions you asked.

Dr. TRAEGER. We will now hear from Mr. Van Meter.

STATEMENT OF KARL K. VAN METER, EXECUTIVE DIRECTOR OF UNITED CEREBRAL PALSY ASSOCIATIONS

Mr. VAN METER. If I might take advantage of the chairman's offer to depend upon the general statement that we have handed to the members of the committee, I would like to call attention to just a few points.

(The statement referred to is as follows:)

GENERAL STATEMENT

Mr. Chairman and members of the committee, my name is Karl K. Van Meter. I reside in New York City and I have been the executive director of United Cerebral Palsy Associations for about 3 years.

United Cerebral Palsy Associations, Inc., is a nonprofit membership corporation, organized in 1949—the only nationwide organization devoted exclusively to a united attack on cerebral palsy. Its humanitarian work is supported by voluntary public contributions. Its officers and board of directors serve without compensation of any kind. National headquarters are at 50 West 57th Street, New York City.

United Cerebral Palsy comprises 163 affiliated State and local organizations throughout the United States.

United Cerebral Palsy and its affiliates are dedicated to an all-out effort to help the cerebral palsied to take their rightful places alongside their more fortunate brothers and sisters—part of the never-ceasing struggle to preserve our freedom and the concepts we hold dear. America's youth must be strong.

United Cerebral Palsy affiliates, both State and local, are devoting their energies and resources to assisting the cerebral palsied in their communities by—

(*a*) Establishing clinics and treatment centers.
(*b*) Training physicians, therapists, and teachers.
(*c*) Securing educational advantages.
(*d*) Setting up recreational centers.
(*e*) Expanding existing facilities.
(*f*) Operating vocational and employment services for adult cerebral palsied.
(*g*) Providing parent education.
(*h*) Supplying transportation to and from clinics, schools, and treatment centers, in addition to many other services.

The national budget committee has approved the United Cerebral Palsy Associations, a member agency, in a report to the Community Chests and Councils of the Nation.

The program and budget of the United Cerebral Palsy Associations, Inc., were reviewed by a special panel of the national budget committee sponsored by Community Chests and Councils of America, Inc., and the National Social Welfare Assembly, Inc., to provide an orderly medium through which national agency program plans and requests for support may be channeled to local communities, on June 24, 1953. This panel, chaired by Dr. Ira W. Hiscock, had extensive conferences with representatives of the organization.

Realizing the broad scope of specialties and services required to establish a total program for the cerebral palsied, United Cerebral Palsy Associations and its affiliates have worked diligently toward preventing duplication of existing

facilities. When the National Institute for Neurological Diseases and Blindness was being written in United States public-health law No. 692, cerebral palsy was specifically stated in the law as being one of the health conditions covered. This was accomplished, in part, as a result of the efforts of United Cerebral Palsy Associations.

Cognizant of the great aid that can be made available to the cerebral palsied by public agencies, United Cerebral Palsy Associations affiliates throughout the United States work closely with many State departments of health, education, social welfare, and mental hygiene. They have activated existing laws, supported revisions and new recommendations to correct outmoded programs, and assisted these departments in obtaining increased appropriations.

The United Cerebral Palsy Associations affiliates work closely with other private agencies interested in the cerebral palsied. They cooperate financially and administratively with such groups as the Grotto, Elks, National Society for Crippled Children and Adults, Catholic Charities, etc., to maintain outpatient clinics, workshops, diagnostic centers, etc. In many communities the money raised by the local affiliate of United Cerebral Palsy Associations is used for grants to existing facilities in hospitals, schools, and rehabilitation centers.

The major emphasis for 1953 and 1954 is upon the expansion of program services. This is being accomplished by the activation of a program services committee with representatives from each of the State affiliates. Various subcommittees of the program services committee are working on specific aspects of a program, such as problems of the mentally retarded cerebral palsied, parent programs, operation of diagnostic and treatment centers, recruitment and training of personnel, recreation and camping, rehabilitation, residence schools, mechanical aids.

A director of program services has been added to the staff of work with the committees and boards in development of their activities. He also visits local affiliates to survey their programs and counsel with them. New affiliates are given assistance in planning their programs.

Orientation of the field staff on program needs and activities has a high priority during this year. The emphasis of the organization is on services in the local community.

In the month of May 1953 there was prepared for the United Cerebral Palsy Associations a survey of its structure, finances, and affiliate activities during 1952, based on completed questionnaires returned to the national office from various local affiliates. As of December 31, 1952, there were 106 affiliates as compared with 163 at the present time. However, approximately 80 percent of the affiliates completed their questionnaires in time for the preparation of this survey. A copy of this survey is attached to this presentation.

One of the oldest affiliates of United Cerebral Palsy Associations is United Cerebral Palsy of New Yory City, Inc. It was established in 1946 by a small group of parents drawn together by the common need and desperate desire to help their children crippled with cerebral palsy. In 1952 the New York City community contributed $762,000 plus for the cerebral palsied, and on page 2 of Report to the Community, issued 3 days ago by this affiliate, it shows that 89.8 percent has been spent on its program; 2.4 percent for general expenses and only 7.8 percent for fund-raising expenses. A copy of this report is attached to this presentation.

It is estimated that in the United States there are 200,000 children afflicted with cerebral palsy and 350,000 adults. We are all aware of the fact that life expectancy in the United States, even in the case of permanently disabled persons, ranks highest in the world today and that medical standards and techniques in medical research in this country are outstanding. What is their span of life? These crippled persons can live as long as you and I. We are informed that many live to the age of 60 and some to 70, even to 80.

Assuming that 10 percent of the adults are self-supporting, the remainder of 315,000 require at least $600 a year for their maintenance, a total of $189 million a year.

On the other hand, if these 315,000 could be rehabilitated and made employable, even at the rate of $1,000 a year, the difference from an economic standpoint would be over half a billion dollars.

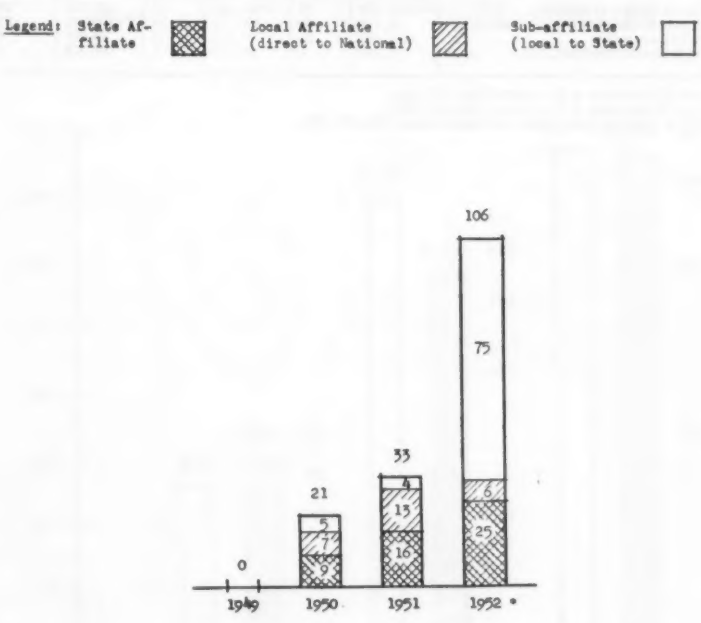
Therefore, gentlemen, you realize that this is not purely a medical problem. It affects the national economy and should be treated accordingly. The difference of half a billion dollars in our economic structure must be the concern of those who guide our destinies in this great Capitol. We sincerely hope that your committee can find a satisfactory solution to this serious problem.

UNITED CEREBRAL PALSY ASSOCIATIONS, INC.—STRUCTURE, FINANCES, AND AFFILIATE ACTIVITIES INCLUDING AFFILIATES' RETURNS TO DATE FROM 1952 SERVICES SURVEY

UCPA
Structure

CHART 1
5/11/53

NUMBER AND TYPES OF AFFILIATES, 1949-1952
As of November 1 Each Year



• Geographic distribution of 1952 affiliates is shown in Table 4, page 6

TABLE 2.—*Income and disbursements, by fiscal years, with disbursements as percent of income, national headquarters*

	1950–51, actual [1]		1951–52, actual [2]		1952–53, budget, as revised March 1953 [3]	
	Amount	Percent	Amount	Percent	Amount	Percent
Income	$515,071	100	$1,360,878	100	$1,526,430	100
Disbursements	589,329	114	1,149,503	84	1,507,143	99
Administration and general expense	95,896	19	173,463	13	163,750	11
Campaign	122,565	23	276,961	20	319,188	21
General campaign	37,126	7	18,083	1	8,947	1
Special events	85,437	16	258,878	19	310,241	20
Program services	370,868	72	699,079	51	1,024,205	67
Direct service to affiliates	171,697	33	246,087	18	368,280	24
Research, training of personnel	91,814	18	327,567	24	490,189	32
Public education	103,591	20	71,510	5	66,218	4
Professional direction	3,766	1	53,915	4	99,518	7

[1] Price Waterhouse & Co., report Sept. 30, 1951.
[2] Price Waterhouse & Co., report Sept. 30, 1952.
[3] UCPA Finance Committee, midyear review, Mar. 16, 1953.

UCPA
Finances

INCOME AND DISBURSEMENTS, BY FISCAL YEARS

In thousands of dollars, with disbursements as percent of income

National Headquarters

CHART 2
5/11/53

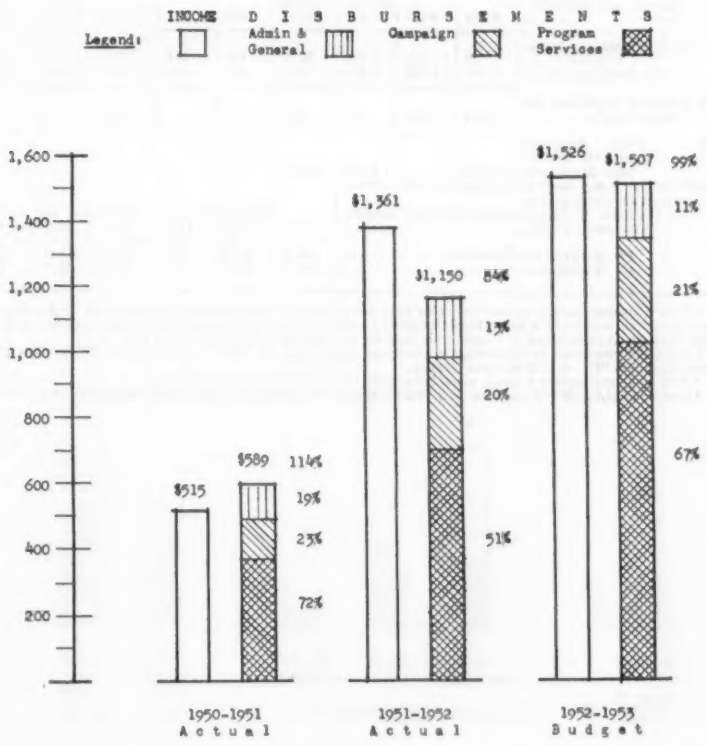


TABLE 3.—*Income and disbursements, calendar year 1952, national headquarters plus affiliates*

[In thousands of dollars]

	Income				Disbursements				
	Total raised in 1952	Affiliates contribution to national headquarters	1952 income available for disbursements		Administration and general	Campaign	Program services	Total disbursements	Reserve for early 1953 program
			Amount	*Percent*					
(1) National headquarters plus affiliates making standard reports of income and disbursements	3,376	+601	3,977	85.5	450	584	1,827	2,861	1,116
(*a*) National headquarters [1]	69	+1,623	1,692	36.3	189	354	726	1,269	423
(*b*) 76 affiliates [2]	3,307	−1,022	2,285	49.2	261	230	1,101	1,592	693
(2) Affiliates reporting income only [3]	1,274	−601	673	14.5					
(3) Total: National headquarters plus all affiliates	[4] 4,650		[4] 4,650	100.0					
Disbursements and reserve as percent of 1952 income available for disbursement:									
(1) National headquarters plus affiliates making standard reports				100.0	*Percent* 11.3	*Percent* 14.7	*Percent* 46.7	*Percent* 72.0	*Percent* 28.0
(*a*) National headquarters				100.0	11.2	20.8	43.0	75.0	25.0
(*b*) 76 affiliates				100.0	11.4	10.1	48.2	69.7	30.3

[1] UCPA special analysis for calendar year 1952, dated Mar. 18, 1953, with supplement May 8. Accounting considerations required the prorating of totals for January through September, 1952, from totals for the fiscal year 1951–52. Actual monthly figures were used for October-December, inclusive, 1952.

[2] Affiliates' responses to financial questionnaire issued Jan. 22, 1953; or comparable information from questionnaires "G" of 1952 Services Survey.

[3] Affiliates' preliminary reports, made informally to UCPA's executive director.

[4] Income of $4,650,000 for calendar year 1952 compares with income of $4,065,000 for campaign year 1951–52.

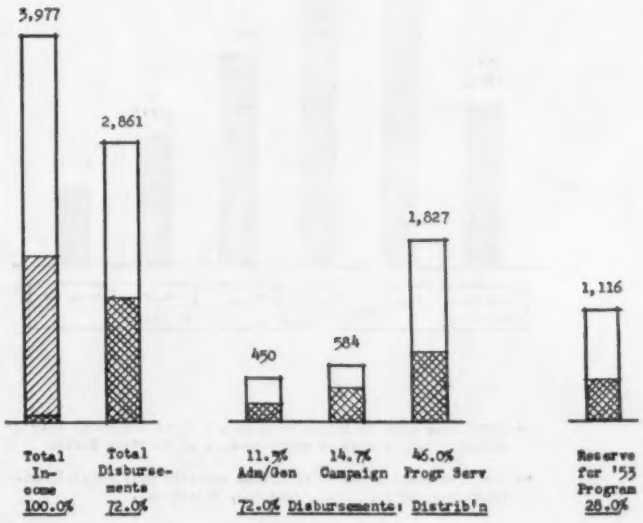
UOPA
Finances

CHART 3
5/11/53

INCOME AND DISBURSEMENTS, CALENDAR YEAR 1952
In thousands of dollars

National Headquarters plus 76 affiliates making standard reports

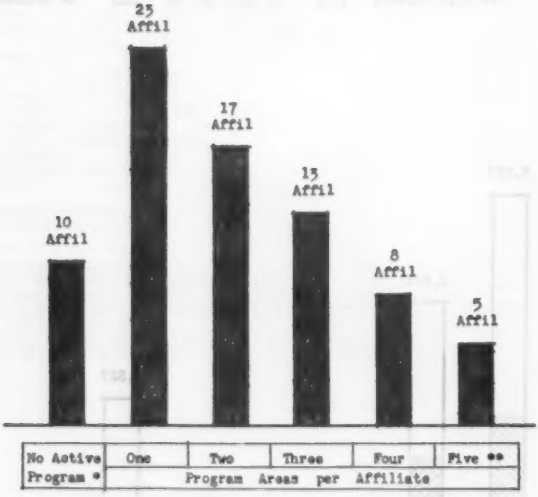
Legend: Affiliate Income or Disbursement; Affil. contrib. to National HQ; Nat'l HQ Income or Disbursement



UCPA Activities

CHART 4
May 11
1953

NUMBER OF PROGRAM AREAS PER AFFILIATE, CALENDAR YEAR 1952



(* Affiliates with No Active Program are those returning only the Affiliate Structure questionnaire of Services Survey.

** The five basic areas of affiliate programs are: Medical, Educational, Recreational, Parental, Vocational.

39987—53—pt. 4——5

TABLE 4.—*Location of affiliates and number of program areas per affiliate*

	Affiliates				Active affiliates reporting	Affiliates classified by the number of programs they report in Services Survey questionnaires returned					
	All, December 1952 [1]	Active in 1952	Active affiliates reporting			No program [2]	1 program	2 programs	3 programs	4 programs	5 programs [3]
			No	Yes							
All regions	106	84	8	76	76	10	23	17	13	8	
New England	13	12		12	12	1	6	1	3	1	
Connecticut	1	1		1	1		1				
Maine	1										
Massachusetts	10	10		10	10	1	5		3	1	
New Hampshire	1	1		1	1			2			
Eastern	35	34	+4	−30	30	4	7	9	4	4	2
New Jersey	12	11	2	9	9	1	3	2	3		
New York State	19	19	2	17	17	2	3	7	1	2	2
New York City	1	1	[4]	[4]	1					1	
Pennsylvania	3	3		3	3	1	1			1	
Central	21	16	1	15	15	2	3	5	2	1	2
Illinois	4	2	1	1	1		1				
Indiana	1	1		1	1	1					
Michigan	11	9		9	9		1	5	2	1	
Ohio	5	4		4	4	1	1				2
Southern	10	8		8	8	1	2	2	1	2	
Alabama	1										
District of Columbia	1	1		1	1			1			
Florida	2	1		1	1				1		
Kentucky	1	1		1	1		1				
Maryland	2	2		2	2	1		1		1	
North Carolina	2	2		2	2		1			1	
Virginia	1	1		1	1					1	

Footnotes at end of table, p. 926.

TABLE 4.—*Location of affiliates and number of program areas per affiliate*—Continued

	Affiliates				Active affiliates reporting	Affiliates classified by the number of programs they report in Services Survey questionnaires returned					
	All, December 1952[1]	Active in 1952	Active affiliates reporting			No program[2]	1 program	2 programs	3 programs	4 programs	5 programs[3]
			No	Yes							
Midwest	4										
Iowa	1										
Missouri	2										
Nebraska	1										
Southwest	5	5		5	5		4		1		
Louisiana	4	4		4	4		3		1		
Texas	1	1		1	1		1				
Mountain	8	6	2	4	4	2	1		1		
Arizona	3	1	1								
Colorado	4	4		4	4	2	1		1		
Utah	1	1	1								
Pacific	10	3	1	2	2				1		1
California	4	2		2	2				1		1
Oregon	1										
Washington	5	1	1								

[1] The official year-end count of affiliates was 105. The number used here includes in addition Baton Rouge, La., where an active program was undertaken in October 1952, although formal affiliation was deferred until January 1953.

[2] Affiliates with no program are those returning only the affiliate structure questionnaire of the Services Survey. 5 of these are State affiliates.

Source: 1952 Services Survey as reported to date.

[3] The 5 basic types of affiliate program are: medical, educational, recreational, parental, vocational. Specialist training programs, supported mainly by national headquarters and a few large-city affiliates, are omitted from this tabulation.

[4] Part.

TABLE 5.—*Program facilities receiving sole or partial financial support from UCPA affiliates, calendar year 1952* [1]

	Facilities and degree of support												
	Total facilities			Medical		Educational		Recreational		Parental		Vocational	
	Combined	Sole support	Part support	Sole	Part	Sole	Part	Sole	Part	Sole	Part	Sole	Part
All regions	144	51	93	22	28	7	22	7	13	13	24	2	6
New England	23	7	16	4	7	2	3		2	1	4		
Connecticut	1	1		1									
Maine													
Massachusetts	20	4	16	2	7	1	3		2	1	4		
New Hampshire	2	2		1		1							
Eastern	64	30	34	13	14	3	7	6	6	7	5	1	2
New Jersey	15	9	6	4	5	2		2		1	1		
New York State	29	15	14	6	4	1	6	3	1	4	3	1	
New York City	12	3	9	2	2				5	1			2
Pennsylvania	8	3	5	1	3		1	1		1	1		
Central	27	9	18	3	3	1	7	1	2	4	5		1
Illinois	2		2				2						
Indiana													
Michigan	20	6	14	2	2	1	4		2	3	5		1
Ohio	5	3	2	1	1		1	1		1			
Southern	12	3	9	1	2	1	1		1	1	3		2
Alabama													
District of Columbia	2		2		1								1
Florida	3	3		1		1				1			
Kentucky	1		1								1		
Maryland	2		2				1		1				
North Carolina	1		1								1		
Virginia	3		3		1						1		1

See footnote at end of table, p. 928.

TABLE 5.—*Program facilities receiving sole or partial financial support from UCPA affiliates, calendar year 1952* [1]—Continued

	Facilities and degree of support												
	Total facilities			Medical		Educational		Recreational		Parental		Vocational	
	Combined	Sole support	Part support	Sole	Part	Sole	Part	Sole	Part	Sole	Part	Sole	Part
Midwest													
Iowa													
Missouri													
Nebraska													
Southwest	7		7		1		1		1		4		
Louisiana	6		6		1		1		1		3		
Texas	1		1								1		
Mountain	4		4				2				1		1
Arizona													
Colorado	4		4				2				1		1
Utah													
Pacific	7	2	5	1	1		1		1		2	1	
California	7	2	5	1	1		1		1		2	1	
Oregon													
Washington													

[1] If a facility (commonly an institution or the affiliate's headquarters) is reported as serving more than 1 program, it is here counted separately under each program. For example, New York City's total of 12 program facilities, above, represents 12 programs served by only 7 physically separate facilities.

Source: 1952 Services Survey as reported to date.

UCPA Activities

CHART 5
May 11
1953

PROGRAM FACILITIES RECEIVING FINANCIAL SUPPORT FROM AFFILIATES

Calendar Year 1952

Legend: Partial financial support from UCPA affiliate

Sole " " " " "

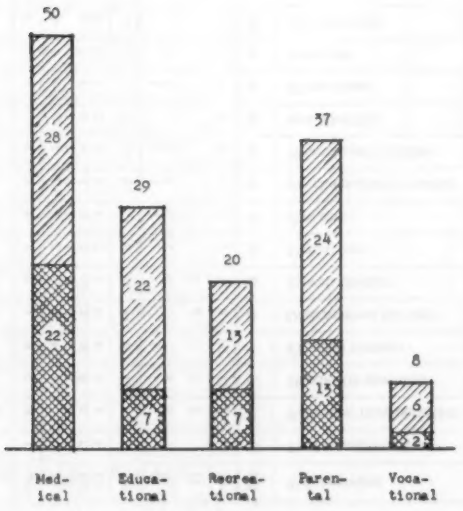


TABLE 6.—*Program services receiving financial support from affiliates, calendar year 1952*

[Not classified as to degree of support]

Region	Total services	Transportation		Medical									Educational			Vocational				Recreational								Parental			
		Paid transportation	Volunteer transportation	Diagnostic screening	Physical therapy	Occupational therapy	Speech therapy	Dental care	Eye care	Psychometric evaluation	Educational guidance	Social service	Clinic school	Preschool	Special classes	Vocational guidance	Vocational training	Workshop	Job placement	Group sports—games	Arts—crafts	Social games	Social dancing	Outings	Spectator events	Scouting	Other recreation	Parent education	Parent counseling	Parent participation	Parent instruction
All regions	634	21	35	43	48	32	44	20	27	36	29	20	18	16	23	8	2	6	3	15	14	13	6	9	12	3	9	30	35	29	28
New England	108	5	5	11	10	9	11	5	7	6	8	5	4	2	3	3				1	1	1	1	1	1		1	1	3	1	2
Connecticut	11		2	2	2	2	2																						1		
Maine																															
Massachusetts	90	5	3	8	7	7	9	5	6	5	7	5	3	2	2	3				1	1	1	1	1	1		1	1	2	1	2
New Hampshire	7			1	1				1	1	1		1		1																
Eastern	305	13	16	21	26	14	23	8	12	19	12	12	7	7	10	3	1	2	2	10	10	8	3	6	8	2	5	12	12	11	10
New Jersey	72	2	4	8	9	3	9	2	3	8	2	2	2	3	2					1	1						1	3	3	2	2
New York State	134	3	9	9	10	6	10	3	5	7	6	5	4	3	7	1		1	1	4	3	2		2	3	2	1	7	7	7	6
New York City	57	3	3	2	3	2	3	1	2	2	2	2				2	1	1	1	4	5	5	3	3	4		3				
Pennsylvania	42	5		2	4	3	1	2	2	2	2	3	1	1	1					1	1	1		1	1			2	2	2	2
Central	107	1	8	5	6	4	6	4	4	6	5		3	2	4	1			1	2	2	2	1	1	2		1	9	9	8	8
Illinois	3		1										2																		
Indiana																															
Michigan	78	1	5	4	4	2	4	3	3	4	4		2	2	4	1			1	1	1	1			1			8	8	7	7
Ohio	26		2	1	2	2	2	1	1	2	1		1							1	1	1	1	1	1		1	1	1	1	1
Southern	42	1	3	3	3	2	1	2	2	2	2		1	1	2	1		1		1	1	1						3	3	4	2
Alabama																															
District of Columbia	4		1	1	1											1															
Florida	12	1		1	1	1	1	1	1	1	1			1	1															1	
Kentucky	3																											1	1	1	

Maryland	5												1		1					1	1	1						1	1	1	1
North Carolina	5		1																								1	1	1	1
Virginia	13		1	1	1	1		1	1	1	1						1										1	1	1	1
Midwest																															
Iowa																															
Missouri																															
Nebraska																															
Southwest	30		1	1	1	1	1		1	1	1	1		1	1					1		1	1	1	1	1	3	4	2	4
Louisiana	28		1	1	1	1	1		1	1	1	1		1	1					1		1	1	1	1	1	3	4	1	3
Texas	2																												1	1
Mountain	13		2										1	2	2		1	1									1	1	1	1
Arizona																															
Colorado	13		2										1	2	2		1	1									1	1	1	1
Utah																															
Pacific	29	1		2	2	2	2	1	1	2	1	2		1	1			2								2	1	3	2	1
California	29	1		2	2	2	2	1	1	2	1	2		1	1			2								2	1	3	2	1
Oregon																															
Washington																															

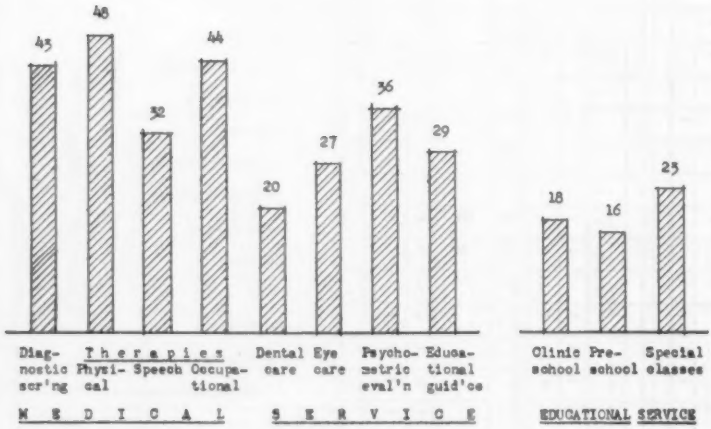
Source: 1952 Services Survey as reported to date.

UCFA Activities

CHART 6
May 11
1953

PROGRAM SERVICES RECEIVING FINANCIAL SUPPORT FROM AFFILIATES
Calendar Year 1952

Not classified as to degree of support



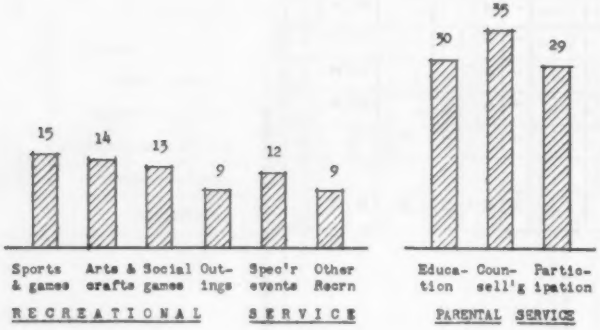


TABLE 7.—*Caseloads of selected program services, calendar year 1952—Number of individuals treated or services rendered*

	Medical, outpatient								Education		Vocational, yearly total			Recreation, total accommodated
	Yearly load			Daily treatments										
	Patients	Examinations	Treatments	Physical therapy	Occupational therapy	Speech therapy	Other therapy	Total therapies	Total students	Student sessions per week	Counseled	Trained	Placed	
All regions	4,290	6,333	159,488	420	250	267	39	976	930	4,358	104	25	29	1,155
New England	531	1,291	13,552	37	29	34	5	105	57	224				99
Connecticut	15	125	679		4	5								
Maine														
Massachusetts	469	1,166	10,873	29	25	29	5		57	224				99
New Hampshire	47		2,000	8										
Eastern	3,130	4,400	117,132	325	157	170	34	686	586	2,894	73	25	20	920
New Jersey	405	333	18,954	109	54	63	18		72	324				
New York State	934	1,838	66,153	120	71	84			124	620				97
New York City	1,135	1,311	25,636	74	22	19	16				73	25	20	823
Pennsylvania	656	918	6,389	22	10	4			390	1,950				
Central	349	320	14,456	33	44	46		123	151	732	15		9	72
Illinois									53	235				
Indiana														
Michigan	109	180	8,055	10	25	34			85	425				42
Ohio	240	150	6,401	23	19	12			13	72	15		9	30
Southern	170	126	10,478	12	9	7		28	37	179	16			
Albama														
District of Columbia	13	13	98								16			
Florida	125	81	6,700	12	9	7			12	54				
Kentucky														
Maryland									25	125				
North Carolina														
Virginia	32	32	3,680											

TABLE 7.—*Caseloads of selected program services, calendar year 1952—Number of individuals treated or services rendered*—Continued

	Medical, outpatient								Education		Vocational, yearly total			Recreation, total accommodated
	Yearly load			Daily treatments										
	Patients	Examinations	Treatments	Physical therapy	Occupational therapy	Speech therapy	Other therapy	Total therapies	Total students	Student sessions per week	Counseled	Trained	Placed	
Midwest														
Iowa														
Missouri														
Nebraska														
Southwest	110	186	[1] 1,935	9	9	9		27	24	120				35
Louisiana	110	186	1,935	9	9	9			24	120				35
Texas														
Mountain									45	59				
Arizona														
Colorado									45	59				
Utah														
Pacific	[2]	[2]	[1] 1,935	4	2	1		7	30	150				29
California			1,935	4	2	1			30	150				29
Oregon														
Washington														

[1] Identical figures for Southwest and Pacific regions are coincidental, not an error in transcription.
[2] Not reported.

Source: 1952 services survey as reported to date.

TABLE X.—*Public funds spent by the States for care of the cerebral palsied, 1951–52 or other latest fiscal year—Summary table*

	Total spent	Department or commission of—			
		Health	Education	Welfare	Mental Hygiene
All regions	$8,056,873	$2,277,987	$2,889,681	$1,221,580	$1,667,625
New England	304,526	57,400		247,126	
Eastern	3,934,524	1,340,000	434,564	500,000	1,659,960
Central	1,012,454		538,000	474,454	
Southern	295,051		287,386		7,665
Midwest					
Southwest	331,637	190,587	141,050		
Mountain	15,365	10,000	5,365		
Pacific	2,163,316	680,000	1,483,316		

NOTES.—The $8,000,000 shown above represents the activity of 29 official agencies in 21 States. 16 additional departments or commissions in 13 States report spending for care of the cerebral palsied as part of broader programs not affording separate classification of this expenditure.

An additional $328,647 is reported as spent for care of the cerebral palsied by 4 special agencies: the crippled children's services of 3 central and midwestern States and the vocational rehabilitation agency of an Atlantic seaboard State.

Source: UCPA poll of department or commission heads in States having UCPA affiliates.

Mr. VAN METER. First, our organization was formed in 1949. It is only 4 years old. Notwithstanding that, we have 163 affiliates covering 52 percent of the Nation's population. The national budget committee has approved for 1953–54 our organization as a member agency in a report to the Community Chest and councils of the Nation.

We had the basic policy of working with existing facilities rather than opening up new clinics, and we worked with the States and the cities, the municipal health, welfare, educational, and mental hygiene departments. We also worked with the private agencies interested in cerebral palsy, and whenever possible, we make grants to existing agencies so that they will enlarge their work. This is the expenditure of money on the local level.

In the month of May 1953, we prepared a survey of the structure, finances, and affiliated activities which is along the lines of the questions directed to Dr. Brooks, and a copy of the activities for the year 1952; in other words, this was a census of our organization's entire activities for 1953, and that will be renewed shortly after the first of the year.

In closing, I would like to say one of the oldest affiliates of our organization is in New York City. It was established in 1946 before the parent organization was formed. It was one of the founding local affiliates. In 1952 this affiliate contributed $750,000 for the services to cerebral palsy in New York City, and on page 2 of their report to the community it shows that 89 percent of that money was spent on program activities, 2.4 percent for general expenses, and 7.8 percent for fund-raising expenses, including the television marathon.

In conclusion I would like to refer to the overall economics of this problem. There are, according to estimates, 200,000 children and 350,000 adults living today born with cerebral palsy. Their life expectancy will be the same as yours or mine. Assuming that 10 percent of the adults are self-supporting, the remainder of 315,000 adults will require at least $600 a year for maintenance, a total of $189 million. On the other hand, if these 315,000 could be rehabilitated through this treatment work, the 75 percent on the local level,

and made employable, even at the average rate of only $1,000 a year, a combined difference from an economic standpoint would be over $500 million. We sincerely hope your committee can find support for this very serious problem.

The CHAIRMAN. We will insert in the record at this point a pamphlet entitled "A Report to the Community by United Cerebral Palsy of New York City, Inc."

(The pamphlet refererd to is as follows:)

A REPORT TO THE COMMUNITY BY UNITED CEREBRAL PALSY OF NEW YORK CITY, INC.

United Cerebral Palsy of New York City, Inc., is the sole local health agency whose entire program and purpose is devoted to the cerebral palsied of our community. A nonprofit, nonsectarian membership corporation, it was established in 1946 by a small group of parents drawn together by the common need and desperate desire to help their children crippled with cerebral palsy. This dramatic, though modest beginning represented the first citywide effort by volunteers to activate the New York City community in helping to salvage the lives of the many thousands of children and adults handicapped by the condition known as cerebral palsy.

During this relatively short period, United Cerebral Palsy of New York City, Inc. has become one of the major voluntary health agencies and today is among the leaders in the country in initiating proper diagnosis, therapy, recreation, vocational guidance, education, and volunteer services for the cerebral palsied.

Through its effective public-education program, made possible by the magnificient cooperation of newspapers, radio, and television, the New York City community has been fully alerted to the fact that cerebral palsy is not a disease. Rather, it is a neuromuscular disability caused by injury to the motor centers of the brain resulting in loss or impairment of voluntary muscular control. The misconceptions of a few years ago that cerebral palsy is hereditary and contagious have been completely dispelled.

Community leaders from the city's governmental, industrial, civic, and entertainment fields, as well as the residents of our great boroughs, have provided unprecedented financial support of United Cerebral Palsy of New York City, Inc. This material aid has enabled the organization to project, develop, and expand a multiphased program assuring the great majority of cerebral palsy sufferers—who, medical authorities agree, can surmount the handicapping condition—of the services so necessary to enable them to become socially adjusted and productive members of our community.

With this presentation, United Cerebral Palsy of New York City, Inc. is proud to report the progress and growth accomplished last year. Prudent professional guidance and planning, efficient administrative operations, and effective spending have converted the $762,112.29 contributed in 1952 by the New York City community into the all-encompassing, maximum program outlined and defined on the following pages. In essence, this report is a tribute to our generous fellow New Yorkers whose interest in and understanding of the cerebral palsy problem will eventually secure the future of New York City's cerebral palsied.

IN 1952, THE NEW YORK CITY COMMUNITY CONTRIBUTED $762,112.29 FOR THE CEREBRAL PALSIED

Funds expended for cerebral palsy program

For National and State programs of research, training, scholarships, public education, and related activities	$346,475.18
Grants-in-aid	266,538.78
Community services	58,898.20
Expenses:	
Fund raising	59,282.52
General operating	18,398.69
Surplus: Toward 1953–54 program	17,518.92
Total	762,112.29

NOTE.—The above figures are summarized from a report submitted by S. D. Leidesdorf & Co., certified public accountants, and are subject to notes and qualifications contained therein.

89.8 percent program, 2.4 percent general expenses, 7.8 percent fund-raising expenses.

THIS MULTIPHASED PROGRAM OF RESEARCH, SERVICE, AND EDUCATION, HELPING NEW YORK CITY'S CEREBRAL-PALSIED CHILDREN AND ADULTS, IS MADE POSSIBLE THROUGH THE GENEROSITY OF THE NEW YORK CITY COMMUNITY

Outpatient facilities

Treatment facilities, usually clinics, for the cerebral palsied who live at home and who require medical and dental care, as well as speech, occupational, physical therapies, and psychological and case-work services at prescribed intervals:

Beth Israel Hospital
Flower Fifth Avenue Hospital
Hospital for Special Surgery
Jewish Sanitarium and Hospital for Chronic Diseases
Long Island College Hospital
Presbyterian Hospital—Vanderbilt Clinic
Visiting Nurses' Association of Brooklyn
Dental Clinic, Columbia University, School of Dental and Oral Surgery
Institute for Crippled and Disabled
Godmothers League
Jewish Hospital of Brooklyn

Inpatient facilities

Resident treatment facilities for the cerebral palsied whose physical condition and/or family and community situation necessitates care away from home. Services include complete residential care, as well as the necessary medical, therapeutic, educational, and dental treatments:

Blythedale Rehabilitation Hospital
House of St. Giles the Cripple
Jewish Sanitarium and Hospital for Chronic Diseases

Clinic schools

Special public-school classes in conjunction with the Board of Education and Department of Health combining a program of education, medical treatment, and therapeutic care for cerebral palsied children from 4 to 10 years of ago:

Public School 135, Manhattan
Public School 67, Brooklyn
Public School 85, Bronx
Public School 118, Queens

Vocational guidance

Counseling and placement services to help cerebral-palsied teen-agers and adults solve problems of vocational selection, training, and actual employment; inform industry as to their capabilities and availability. During the past year, with better than a 25-percent placement amongst its registrants, it has been conclusively demonstrated that a cerebral palsied can be gainfully employed:

Vocational Counseling and Placement Service of UCP of New York City, Inc.
Federation of the Handicapped
Vocational Advisory Service
Institute for the Crippled and Disabled

Recreation

Activities program geared to the educational and social needs of the cerebral-palsied child and adult:

New York Philanthropic League
Vanderbilt Recreation Center
Manhattan Recreation Center, UCP of New York City, Inc.
Farragut Recreation Center (Brooklyn), UCP of New York City, Inc.
Melrose Recreation Center (Bronx), UCP of New York City, Inc.
Adult Group, Hospital for Special Surgery
Teen-Age Group, UCP of New York City, Inc.
Handicapped Children's Home Service
Brownsville Boys Club (Brooklyn)
Federation of the Handicapped.

Professional advisory service

Establishment of professional standards for the effective functioning of the cerebral-palsied facilities maintained and supported by UCP of New York City, Inc.:

Cordinating Council for Cerebral Palsy in New York City, Inc.
Dental Guidance Council for Cerebral Palsy

Camping

Specially devised summer camp facilities for the cerebral-palsied:
Camp Carola
Camp Oakhurst
Camp Jawonio

Research

Grants to colleges, hospitals, and education, health and welfare agencies to investigate areas of causation and to develop preventive techniques in the medical, social, psychological, and educational fields for the treatment of cerebral palsy:
United Cerebral Palsy Associations
Coordinating Council for Cerebral Palsy in New York City, Inc.
International Council for Exceptional Children
Hunter College—Department of Special Education
Columbia University, Teachers College, Department of Special Education

Training of personnel

Scholarships and grants to encourage individuals for professional careers in the field of cerebral palsy and thus maintain the flow of sorely needed trained personnel:
United Cerebral Palsy Associations
Coordinating Council for Cerebral Palsy in New York City, Inc.
International Council for Exceptional Children
Hunter College, Department of Special Education
Columbia University, Teachers College, Department of Special Education

Transportation

Provision of transportation for the cerebral palsied to and from their homes to various facilities throughout New York City:
Volunteer Motor Corps, Women's Division, UCP of New York City, Inc.
American Women's Voluntary Services, Inc.

Volunteer training

Training and implementation of courses for volunteers who will work in CP facilities as aides:
Women's Division, UCP of New York City, Inc.

Public education

Maintain a continuous public education and information program to alert and enlist the support of the members of the New York City community, including physicians, therapists, psychologists, educators, legislators, and volunteers; prepare, print, and distribute informative literature dealing with the various aspects of cerebral palsy:
United Cerebral Palsy of New York City, Inc.

Counseling

Advice and guidance to the cerebral palsied regarding available facilities and direct referrals to meet their particular needs.
United Cerebral Palsy of New York City, Inc.

Evaluation, planning, and coordination of facilities

Review of citywide needs and evaluation of facilities and services for purpose of establishing and supporting programs which can meet these needs. Initiate studies, conferences, services, and long-range planning to broaden the entire multiphased effort on behalf of the cerebral palsied:
United Cerebral Palsy of New York City, Inc.

While the foregoing program of United Cerebral Palsy of New York, Inc., reflects progress and expansion, it, by no means, represents the optimum in services necessary for the cerebral palsied of our community. With the caseloads at our schols, clinics, and recreation centers daily increasing, with encouragement coming from our research areas throughout the country, and with the limited numbers of trained personnel available, it is imperative that more funds be available to accelerate and intensify our present rate of operation.

One million dollars in 1953–54 is the minimum sum with which our present 14-point program can be geared to meet these increased demands.

In addition, there remain important areas which to date have received but token attention due to financial limitations. These are:

Residential care.—At present, there is no special program designed exclusively to provide the long-term residential, custodial care for the severely dis-

abled cerebral palsied child and adult. Where facilities do exist, they have been limited to admit comparatively small numbers of children with moderate or moderately severe handicaps and thus have not been available for the severely disabled. Additionally, it is essential for those receiving custodial care to be maintained at their highest level of achievement. Otherwise, they retrogress and become greater social and economic burdens.

A residential care center for the severely handicapped will be sought in 1953–54.

Clinic schools.—The present cerebral palsy population in the 4 special CP public school classes is limited and maintained to a total of 100. This, in itself an inadequate number, accounts solely for the 4- to 10-year age group. It is mandatory to increase this age maximum through the age of 17, or the high-school equivalent, to take advantage of the formative period of the child's life. Such a program can readily begin as a demonstration group within one of the existing special school units.

A special high-school unit for the older cerebral palsied will be sought in 1953–54.

State program.—State aid is essential in achieving a maximum program for the cerebral palsied of New York City. Toward this end, United Cerebral Palsy of New York City, Inc., has continuously worked through United Cerebral Palsy Associations of New York State to develop effective attention and appropriations for comprehensive services for the cerebral palsied in hospitals, treatment clinics, schools, and State institutions.

By working closely with the four New York State departments—Health, Education, Mental Hygiene, and Social Welfare—the standards in the State-sponsored facilities will be elevated as well as the facilities themselves be expanded.

Gradually, all areas pertinent to the well-being of the cerebral palsied are being investigated, evaluated, and activated. One million dollars is the minimum requirement for 1953–54 to enable United Cerebral Palsy of New York City, Inc., to maintain and expand the special services which will give the cerebral palsied an opportunity to participate in and enjoy our American way of life.

The CHAIRMAN. Mr. Van Meter, both you and Dr. Brooks have presented to the committee a very full and complete statement, which will also be made parts of this report. I am glad that the members of the committee have had these statements made available to them for the reason that they contain such important information that I would not want the brief summaries each of you have made to be an indication that was your total contribution to the work of the committee. That which you have presented to us, as I have already indicated, is of extreme importance and we wish you to feel free to give us any additional information you can in connection with your prepared statement that you think should be made a part of the record.

Dr. TRAEGER. I think that that concludes the testimony on cerebral palsy. I will now call on Mr. Carl Owen to present the story of multiple sclerosis.

STATEMENT OF CARL M. OWEN, FIRST PRESIDENT, NATIONAL MULTIPLE SCLEROSIS SOCIETY, NEW YORK CITY

Mr. OWEN. I would like to have my prepared statement inserted in the record at this point.

(The statement referred to is as follows:)

STATEMENT OF CARL M. OWEN[1] ON MULTIPLE SCLEROSIS BEFORE THE HOUSE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE ON OCTOBER 7, 1953

The fact that the problem of multiple sclerosis interests this committee is a source of great encouragement and satisfaction to all of us. I appreciate the

[1] Carl M. Owen, first president, National Multiple Sclerosis Society; member, executive committee, board of directors; senior partner of the law firm of Willkie, Owen, Farr, Gallagher, and Walton, New York City.

opportunity to testify about its work and on behalf of the many thousands of those afflicted.

Seven years ago, my knowledge of multiple sclerosis was limited to my acquaintance with the daughter of one of my clients, the late Margaret Frohnknecht Kober, wife of the famous playwright and author, Arthur Kober. Margaret Kober was a beautiful talented woman with one child. She became progressively incapacitated by multiple sclerosis over a period of 12 years, until her death. The most renowned doctors in the world could not stop the progress of the disease or give her any relief. The disease took her in progressive stages from an ambulatory patient to a wheel-chair patient and finally to a helplessly incapacitated bedridden patient who had to be fed and dressed, and endure unsuccessful and painful operations.

I became aware that her tragic situation, as the victim of a terrible malady whose cause was not known and for which there was no cure or alleviation, was not unique. A multitude of other persons, rich and poor, in the youth of their life, were similarly afflicted.

At the instance of Miss Sylvia Lawry, whose bedridden brother has the disease, and who had joined with a group of people having a personal interest in multiple sclerosis, I became the first president of the National Multiple Sclerosis Society, formed in October 1946 to create and support a program of research, clinics, rehabilitation, and other services for multiple sclerosis and related neurological diseases.

Multiple sclerosis is not a reportable disease but it is estimated that about a quarter of a million people are afflicted. Moreover, additional tens of thousands are afflicted with related neurological diseases and stand to benefit from the conquest of multiple sclerosis. The drama, the significance, the tragedy of multiple sclerosis lies in the facts that (1) it is a chronic disease of long duration; (2) it first strikes young adults between the ages of 20 and 40; (3) it is generally progressive; (4) its symptoms are devastatingly widespread and disabling; (5) there is a paucity of treatment centers for multiple sclerosis in this country or anywhere; and (6) its cause and cure are not known nor is there any specific effective treatment.

The lifetime of the multiple sclerosis patient is one of progressive disabilities. Most common early symptoms are double or impaired vision, staggering gait, difficulty or inability to walk, tremors, numbness of parts of the body, speech difficulties, and lack of bladder and bowel control. Eventually, paralysis of one or both legs is common. Therein lies the drama of multiple sclerosis—a lifetime of increasing disabilities. Many outstanding neurologists have pronounced the disease as the most important neurological problem now confronting society.

Multiple sclerosis is an economic, social, and public-health problem of the first order. It attacks young people in their prime of life when they normally would be in a position to make their greatest contribution to society in terms of productivity and talent. Many cannot earn a livelihood after several years with the disease, and are a burden to their families, and in some cases to the Government. With no single specific treatment available, there are few hospitals which will accept multiple-sclerosis patients unless they are acutely ill. This leaves the burden of long-term and expensive medical and nursing care on the patient's family. The cost of medical care in multiple sclerosis cases is unusually great because there is a tendency for desperate patients to go from doctor to doctor seeking a cure. While multiple sclerosis is not a killer, eventually it leads to death directly or by virtue of secondary causes such as pneumonia, or infection brought about by the disease.

Raising funds to fight multiple sclerosis was and is a job of the greatest magnitude for the National Multiple Sclerosis Society, the first health organization devoted to this field of work. Because of erroneous opinions as to its infectious or hereditary cause, and the desire of the family not to let the victim know with what he was confronted, it had become a hush-hush disease. In a great many instances, diagnosis of the disease was missed by the attending physician. Consequently, the public was unaware of the widespread incidence of the disease. Another obstacle faced by the National Multiple Sclerosis Society is that with the increasing difficulty encountered by all charitable organizations of raising funds from private sources, the older more established agencies have the first claim for support. Our society, as a new agency, cannot begin to command the full extent of financial support which its program warrants.

Our greatest support has come from those with a personal interest in multiple sclerosis—patients, relatives, and friends. While the disease is found in the

families of many people of prominence, we know of no great public figure who could rally the public around our cause, as President Franklin D. Roosevelt did for polio. Yet the scope of our problem was tremendous and called for a broad program of research and an intensive program of relief and aid for multiple-sclerosis patients.

In August 1950, the National Institute for Neurological Diseases and Blindness came into being, offering the first real governmentally supported program of research in the neurological field. The expenditures of public funds by a Government institute for a public-health problem is invaluable to an organization like ours which is overwhelmed with monumental problems and limited funds to cope with them. The work of the institute is especially indispensable to the National Multiple Sclerosis Society which still has not obtained the public support it needs and deserves. The work of the institute supplements our work and is no substitute for it. Notwithstanding the work of the institute in the research field, the need is so great that our efforts to raise funds for research have not diminished but rather redoubled each year. This is a job which needs the combined efforts of both the Government and private sources.

Since our inception about 7 years ago, through September 30, 1953, the National Society (exclusive of funds retained by its 30 chapters) has raised the sum of $1,339,115 and has spent $1,227,304 (see exhibit A on figures of funds raised and expenditures).

Our major emphasis has been on research, even at the expense of other aspects of our program such as the promotion of treatment clinics and patient care. As shown by exhibit A, the national society has spent $488,531, or 49 percent of its total expenditures, on research—a high percentage as compared with other voluntary health organizations. The society has supported 31 research projects at leading medical centers of the country. These projects include 5 research clinics related to basic research projects; in addition, 3 treatment and service clinics have been established by our chapters. At these clinics diagnostic services, treatments to ameliorate symptoms, and physical therapy are made available to patients in those areas, and important information is collected as to the characteristics of the disease and the effect, if any, of types of treatment. These clinics are pitifully inadequate to service the large number of multiple sclerosis patients in the country and as reliable sources of knowledge about the malady, but they represent an encouraging innovation in the once hopeless picture and a good beginning.

As shown by the exhibit, $141,262 has been spent on lay and professional education, an important function of the society designed to educate the medical profession and counteract public apathy, neglect, and lack of understanding of the disease. Lay education includes the publication of a periodic bulletin, Arms Forward, which keeps members informed on developments in the field and serves as a morale booster as well.

The sum of $53,519 has been expended on a service program designed to bring aid to multiple sclerosis patients now and to be of service to the medical profession. This includes the publication of home-care manuals to guide patients in a home-care program of physical therapy. It also includes the distribution of periodic medical manuals to the medical and nursing professions to keep them in touch with current medical and research developments. These manuals are distributed free of charge to patients, physicians, medical schools, teaching institutions, and libraries.

Another important task of the National Multiple Sclerosis Society is to investigate so-called cures, and inform patients of our findings so that they do not fall prey to ill-founded claims of cures.

As shown by exhibit A, in 7 years the sum of $108,942 has been expended on general administration costs of the national society. (See exhibit B for executive salaries.)

Our chairman, a distinguished scientist, and our president and vice presidents, and the members of our executive committee give a great deal of time to the society's work on a purely voluntary basis. Our salaried executive staff consists of an executive secretary, a field director, a medical director, and a public-relations director. We are understaffed. A consultant medical director receives a meager compensation, on a per diem fee basis. All the rest of the office work consists of clerical help.

The society has become the clearinghouse for information on multiple sclerosis not only nationally but internationally as well. Correspondence with doctors, institutions, and grantees of funds is very heavy. We have recently organized

the panel of international corresponding neurologists which disseminates information on the disease to research investigators from 34 countries. Every week, we receive an average of about 400 letters from patients and physicians asking pertinent questions on multiple sclerosis, the status of certain forms of treatments, etc. Many of these inquiries pose questions which must be answered individually. This kind of service is part of the treatment of multiple sclerosis. This kind of service is a morale booster to patients who now know that something is being done in an organized way to cope with their problems. Functioning as a clearinghouse on information and service for multiple sclerosis requires staff.

Our medical department organizes a semiannual meeting of our medical advisory board. Serving on that board, and traveling from all parts of the country at no expense to the society, are 48 distinguished neurologists and other scientists, representing many of the leading medical schools and hospitals in the country. At these meetings, applications for grants-in-aid are considered and voted upon. Progress reports from grantees are heard and viewed in considering the continuation of previously supported research. The medical director screens and reorganizes research applications where indicated, in advance of consideration of the medical advisory board.

In order to give consideration to research trends, a research orientation group was organized. This group is composed of several of this country's most outstanding scientists who meet at frequent intervals and examine the various theories as to the possible cause and control of this disease.

In order to advance scientific interest in our problem, several medical conferences on multiple sclerosis were stimulated, with the cooperation of other scientific organizations. They were: Symposium on multiple sclerosis of the Association for Research in Nervous and Mental Diseases, in New York City, in 1948; and conference on the status of multiple sclerosis, sponsored by the New York Academy of Sciences, at the Barbizon Plaza in New York City, in April 1953.

We now have 30 chapters and are organizing more. We should have a hundred. They are seldom organized spontaneously. They perform a very important public function by raising funds for research projects in local institutions, by establishing and supporting local clinics, and by providing aid to local invalids. Each has a local medical advisory board. They arouse and maintain local interest in the problem. The creation, servicing, and supervision of these chapters required a substantial amount of well justified administration expense.

The Damon Runyon Memorial Fund for Cancer Research boasts that it does not spend a cent on administration but allocates all funds to research. It neglects to say, however, that the American Cancer Society does the vast amount of unavoidable administrative work necessary to service cancer patients and carry on its great national program, thus relieving the Damon Runyon Memorial Fund of administrative responsibility.

Multiple sclerosis is a complicated disease requiring an intensified and long-term program of research. The reason for this is that there are many theories on the cause and cure for multiple sclerosis, all of which must be explored before we can concentrate on one field of investigation. Such projects cover theories that multiple sclerosis may be due to a virus, allergy, infection, metabolic disturbance, blood clots, circulatory maladjustment, and other causes. With the strengthening of our research program, our knowledge of the disease has increased immeasurably. For example, we have learned that the blood and urine of multiple-sclerosis patients differ widely from normal. We have learned that the metabolic process of patients is not what it should be. One of our grantees has reported on the abnormal quantity of cyanide found in multiple-sclerosis patients, an observation which is being further studied. In multiple sclerosis, the disease process occurs when the myelin which surrounds the nerves is destroyed in patches somewhat like the wearing away of the insulation which covers electric wires, thereby causing a short circuit. Several of our research projects are devoted to the problem of what happens in this demyelination—what causes the myelin to break down and how it breaks down. What causes remissions, the mysterious phenomenon which occurs in this up-and-down disease in which the patient suddenly but temporarily improves for no known reason? If we can learn what causes remissions, we may be able to learn how to make remissions more lasting and how to control the disease.

We do not know from what source or sources the answer to multiple sclerosis

will come. We do know that in our present stage of knowledge, we have to explore all worthwhile theories of responsible investigators, no matter how divergent.

In the past, many research investigators were hesitant about centering their work on neurology—the stepchild of medicine. Where would they get their financial support? Where was the public interest that would lead to such support? It is true that neurology represents a field affecting about 13 million people but research investigators need economic security to work effectively. I can proudly state that the National Multiple Sclerosis Society has stimulated a new scientific and optimistic interest in neurological disease. Yet, there is still a shortage of skilled investigators to go on with this important work. That is why in the coming year, we have appropriated funds for a fellowship program to interest young men at the graduate level to center their work on research into multiple sclerosis and related neurological diseases. We are confident that this will pay big dividends in the long run.

The problem of multiple sclerosis and related neurological diseases is a staggering one which requires the concerted efforts of the National Multiple Sclerosis Society, the Government, and the general public. Only with that kind of teamwork can the solution to multiple sclerosis and related neurological diseases be found in our day so that those afflicted may be aided.

When the magnitude of the problem is understood, we believe that it will be realized that all the efforts of our society and of kindred bodies, as earnest and vigorous as they may be, must be supplemented by very substantial governmental outlay.

EXHIBIT A.—*Funds raised and expended by National Multiple Sclerosis Society since inception*

	1946	1947	1948	1949	1950	1951	1952	1953 (Sept. 30)	Total	Percentage of total expenses (through 1952)
										Percent
Funds raised: [1] National society	$54,703	$84,366	$147,966	$186,237	$181,907	$190,321	$248,032	$245,576	$1,339,115	
Expenditures:										
General administration	2,234	5,570	11,916	20,902	21,092	25,546	21,679	[2]	108,942	10
Lay and professional education	5,360	12,922	28,279	49,089	7,829	14,118	23,662	[2]	141,262	14
Medical administration	927	1,758	9,107	16,206	18,609	21,677	30,896	[2]	99,286	10
Research projects [3] (including 5 research clinics)		11,129	62,368	118,871	76,271	119,531	100,360	[2]	488,531	49
Service projects	1,597	3,981	8,429	15,018	6,740	9,395	8,372	[2]	53,521	5
Organization and development of chapters			40	214	5,875	16,925	18,854	[2]	41,910	4
Promotion		31	8,027	20,727	17,003	11,317	18,345	[2]	75,452	8
Unallocated expenditures, 1953								[2]	218,399	
Total	10,118	35,391	128,166	141,127	153,419	218,509	222,171	218,399	1,227,304	

[1] In addition to what was remitted to national society, approximately $529,906 has been raised by chapters.
[2] Breakdown not yet available.
[3] Exclusive of approximately $109,559 expended by the society's chapters on 3 treatment clinics.

EXHIBIT B.—*Executive salaries, National Multiple Sclerosis Society, since inception*

	1946	1947	1948	1949	1950	1951	1952	1953 (annual)
Executive secretary	$1,700	$3,051.70	$4,106.80	$5,895.89	$5,475.08	$7,156.65	$6,545.73	$7,468.00
Executive director				7,875.00				
Medical director			2,083.35	10,000.00	10,000.00	10,000.00	10,000.00	4,000.00
Associate medical director					1,800.00	4,650.00	5,000.00	8,000.00
Field director					2,684.35	6,791.66	12,500.00	11,500.00
Public-relations director				925.00	797.00	3,326.45	4,033.28	4,504.97
Total	1,700	3,051.70	6,190.15	24,695.89	20,756.43	31,924.76	38,079.01	35,472.97

Mr. OWEN. I am going to try to act both as a doctor and a layman in this presentation.

First, what is multiple sclerosis? It is frequently known as disseminated sclerosis. It is a disease of the brain and spinal cord in which the fatty sheath of the nerve cell is destroyed and in consequence the nerve cell ultimately is displaced by a scar cell, resulting in a total lack of function of that part of the nerve system, and resulting quite frequently in thereby preventing the passage of nerve impulses from that nerve to the eye or the muscle, or whatever part of the body is affected.

It is a disease that starts in a small way and is progressive. It is a disease marked by what is known as remissions. Sometimes a person appears to get over it for a day, weeks, or for years, but normally it is progressive and starts with very minor symptoms and goes on until we have a bedridden patient unable to tend to himself or herself and completely dependent upon the care of family or nurses.

The initial symptoms are double vision, staggering, or inability to keep one's balance, numbness of the parts of the body, general tingling of the fingers, tremors, stuttering speech, involuntary movements of the eyeball, extreme weakness, emotional disturbances, and bladder troubles, but finally ending up, I say, with paralysis of one or both legs, or one or both arms, and the patient being completely bedridden and unable to take care of himself, a situation which becomes very tragic to the family.

Nothing whatsoever is known about the cause of this disease, and there is no known cure of any kind. There is no effective treatment of any kind for the alleviation of the symptoms. Some work is being done in physical therapy, and from time to time various drugs are utilized, but the result is uniformly ineffective.

Until our society was formed in 1946, there was relatively little known about the disease publicly, and we were the first organization that spearheaded a knowledge of this disease. We have grown to the point where we have 31 chapters. We ought to have 100. We have spent money on about 31 research projects. I am proud to say that out of all the money we have raised practically 49 percent has been spent on research. Our record as to the amount of money spent on administration is extremely creditable to us. You will find those figures in our report.

One of the bad things about this disease is the failure of physicians to make a correct diagnosis. Correct diagnosis is missed by the ordinary physician in a great many cases. A very prominent scientist connected with our organization had as a member of his family an outstanding scientist. He did not recognize until our society was organized and we had some articles appearing in a magazine that one of the members of his family had the disease for 6 years. I have asked my nose doctor about it and he says that very frequently he has been confronted with cases where eye doctors have sent him patients thinking that maybe the trouble was local infection in the sinuses, and it turned out that the man had multiple sclerosis. That is a common experience, so that one of our problems is to educate the physicians as best we can so that they can diagnose the disease.

In that connection, and as a part of our educational work, I want to hold up some of the pamphlets that we have prepared and dis-

seminated. We have prepared a pamphlet giving all the known knowledge as to multiple sclerosis and how to possibly diagnose it and present it to all the physicians we could in the country. I think that we distributed somewhere between 30,000 and 40,000 copies free to the medical profession.

The CHAIRMAN. Can that be made available to the committee?

Mr. OWEN. I will be pleased to make it all available to the committee.

We have concentrated on research, and the 31 research projects are either completed or under way in such institutions as Harvard, Columbia Neurological Center, Boston University, Miami University, and all over the country.

The amount of money that we have raised and how we have spent it for salaries and so forth are in my statement.

We believe that there are about 250,000 people in the United States, as near as we can estimate, who are afflicted with the disease. That really means 250,000 families that are under the crippling and disabling effects of this disease because very shortly the patient becomes so that practically all the members of the family have to look after the patient.

One of our great troubles is there are no hospitals to take care of these people. By and large, most of the hospitals will refuse to take the patient. They cannot do anything for him. After they get him in they cannot get him out. He is apt to become just a permanent resident there as a load on a hospital that already cannot meet operating expenses for its regular patients.

There are very few hospitals that take chronic diseases. In New York we will say there are about two, and just recently we had a very tragic case of a woman who had a boy who was a cripple. She wanted to get him in a hospital. She found a hospital in Brooklyn and found out that they had a waiting list for 5 years, and in Peoria, N. Y., where they will take such cases, they had a waiting list for 2½ years. She had to take care of her son and herself. That is not a unique case. It is quite a common thing.

On the question of the economic burden arising from this situation, of course it is very difficult to say. When you have a disabled boy in that age group, not only is he no longer a working member of society, but his family are not able to do the work that they were able to do before. He is a burden on doctors. He is a burden on food. He is a burden on transportation. He is a burden on the whole body of society. He is a burden on his friends because they give a lot of thought and care to him. The figures must be very large, and much larger, I think, per patient, than any other known type of disease because this being a progressive chronic disease, you have somebody for 30 or 40 years that is just a burden on himself, his friends, his family, and society in general.

Mr. WILLIAMS. Is there any pain connected with it?

Mr. OWEN. Not very much.

Dr. TRAEGER. In the last stages, yes, considerable pain; not in the early stages.

Mr. OWEN. Here is the thing that got me interested in this. The daughter of one of my clients had the disease badly. She got to where her knees were pulled up into her stomach and her heels into her buttocks and there was considerable pain or soreness from that.

She could not lie in bed in a comfortable position on account of that and had to be operated on so her legs could be straightened out so she could lie in bed flat.

I have seen several cases where the poor person was absolutely flat on the back, could not turn right or left, could not move an arm, and was not only in psychological pain but considerable physical pain as the result of that situation.

I mentioned what we have done in the way of education. I mentioned what we have done in the way of research. It is totally inadequate. I think Dr. Traeger mentioned this morning what could be done in the way of research if we had the funds available for it.

A query: Does the creation of the National Institute of Neurological Diseases and Blindness and the appropriations for it in any way diminish private effort? Answer: Absolutely no; it only increases it.

The efforts of this society and all of its organizations that go ahead and in a voluntary way try to find results have been multiplied, and our program for research, for aid, our program in every way contemplates our going ahead with all the speed we can.

Of course, we are confronted, as all these other agencies are, with the impact of the income tax on our private citizens and the great difficulty of raising money. Our particular agency is confronted with another difficulty that does not confront heart or cancer, and that is, they were first in the field and have captured the popular imagination, and we coming along at a later date find it more difficult raise money from people who have their interests devoted to these other—and properly devoted—to these other diseases.

Mr. Heselton raised a question this morning: Where does the money come from? If this body will bear with me a minute, I would like to talk about taxes. What I have to say is not in any way political, critical, or anything.

Fundamentally, of course, an income tax is a consumption tax. I theoretically, am a taxpayer because I have apparently a substantial gross income, and I am the conduit of relief from which money flows from some source into the Federal Treasury. I am not really the taxpayer.

The consumer of goods is the taxpayer. The fellow that buys a loaf of bread, he pays the tax of the fellow that sells him that loaf across the counter; he pays the tax of getting that loaf of bread over that counter; he pays the tax of the baking company and all the employees that baked the bread; he pays the tax for getting the flour to the baking company; he pays all the taxes all the way back to the farm because, unless he pays that tax and those fellows get reimbursed for their tax, they would not have enough left out of their income to live on. The taxpayer is the consumer. The income tax is a consumption tax. Now, the consumer, by and large, is just the average man. The man that drives a taxicab here is a consumer, and relative to his income against mine—and theoretically I am a taxpayer, but I am just a conduit—he consumes in bread and clothing and ordinary consumable things much more than I really, although my income may be several times his. So what? My point is that when that fund comes to the Federal Government out of the consumption by the average man of his food and his clothing and his shelter, and after the expenses of Government and other things are taken care of, you have a trust fund.

That comes out of what that fellow could do in the way of taking care of his own health. What shall you do with that trust fund? Here I have come to something that is in reality a deep thought with me, and I want to say with a lot of my friends and associates I would rather spend that trust fund in taking care of these thousands and millions of our own people than I would in spending it all over the world in driblets in taking care of others that we do not know about. I would say that if you solved the problem of multiple sclerosis in the United States, you would be solving it for millions of people afflicted with multiple sclerosis all over the world. The disease is very prevalent in Europe.

You may not only solve multiple sclerosis; you may solve a lot of other kindred neurological diseases. Neurologists with the eminence of Dr. Bailey here pronounce multiple sclerosis as the outstanding neurological problem known to science today. You solve it and you may solve a lot of other things. That, in my judgment, is far more important in the world than anything else. It is of more importance to them, as well as to us, than to fritter our money away in a lot of foreign projects. That is not a criticism of anybody's foreign aid. It is my fundamental belief that we should take this money that comes out of this consumer and devote it to these neurological diseases.

Gentlemen, I thank you.

The CHAIRMAN. I am very much interested in just what you said. You have indicated some thoughts somewhat similar to mine. It may be for the reason your thoughts and mine are running alike that I appreciate more what you said than otherwise would be the case.

There are some who are fearful that when you speak in the terms you have used here today you are approaching so-called socialized medicine. I am not one of those who scares so easily by merely raising the claim that any good you try to do is socialization. I have a very strong feeling there is an obligation on the part of the Government to be helpful to the people. This National Institute we have here set up for the purpose of studying these diseases is all part of the plans, as I interpret your remarks, and certainly no one charges that with being socialized medicine because it is something the Government is doing. I do detect, however, in the way you presented it, there might be some who would think of it in those terms, even though some of us might not think they would be justified in so doing.

Mr. OWEN. Let us look things in the face and not at any time be scared by the bugaboo of aid. I do not think anybody could have grown up in a more conservative life than I or be more naturally hostile to Government taking over anything. I am very hostile. I have been a Republican all my life. I would vote for the devil if he were a Republican; nevertheless, most of my partners are Democrats and they are all wonderful fellows and have as much patriotism and desire to do good for the country as anyone, so this is not Democrats or Republicans.

The CHAIRMAN. You say that many of your friends are Democrats?

Mr. OWEN. I say that a great many of my partners are.

The CHAIRMAN. I assume you speak of Wendell Willkie, who at one time was a Democrat.

Mr. OWEN. At one time. He saw a little light of day, anyway.

There are realms of activity, such as the Neurological Institute, that are beyond the capacity of the ordinary individual, acting as an

individual, or through his local organization, to cope with. In the first place, he cannot raise the money. He does not have the capacity to take it out of the private citizen who is rather indifferent to the problem. He does not see it. The average citizen does not see the problem that you gentlemen are seeing today. He is interested, as I am, in going to the ball game or having a ride on Sunday. He does not see the problem. It requires expenditures, and so forth, on a much larger scale than can be relied upon from private citizens.

Now, we were in that realm in the investigation of nuclear fission and the atomic bomb. It never could have been done by private industry. It might have been done 50 or 100 years from now. It would require that the Government step in and take hold of the problem. I think some of these problems of public health have to be approached on that level.

Now, whether that goes to the question of giving every citizen his own medical care, that goes to a totally different thing. I know that medical care is getting to be so expensive, proper medical care, for the average man that very frequently he just cannot get it. Neither can he nor his friends. Nevertheless, he should have it. That is a totally different problem than the one that we are confronted with here.

The attack on these diseases, cerebral palsy, polio, cancer, heart disease, multiple sclerosis, must be by the Government as something affecting the entire body of citizens and the entire economy to supplement what we in our small way and with our best efforts can do in our voluntary organizations.

Mr. HELLER. As I understand it, therefore, you are advocating a plan of Government subsidy; is that correct?

Mr. OWEN. I do not care whether you call it a subsidy or not. I am advocating the Government putting money in a neurological institute, and putting it into other institutes affecting other diseases where a great body of intelligent men can attack a national problem. We cannot raise enough money privately to do it.

Mr. HELLER. I agree with you.

The chairman mentioned that perhaps that might be called socialized medicine. As far as you are concerned, you do not care what name you call it?

Mr. OWEN. I do not care about the name.

Mr. HELLER. Suppose the argument is advanced that it is socialized medicine, would your position still be the same?

Mr. OWEN. I would say get away from the name. They are all afraid of names. Get away from the name.

I will give you an example. Take roads. Roads originally were all privately built. They charged tolls for them. Well, after a while they discovered that the free movement of people, free transportation of people, was such an important social benefit to all of us that roads became a public thing and everybody could move over them without charge. Well, that is a very simple illustration. There are a lot of things that are of such importance to the entire social body and cannot be taken care of by private enterprise that, as a great cooperative society, we must take care of them through the Government.

Mr. HELLER. Is it your statement, Mr. Owen, that there are hardly any cures for the diseases we are discussing and that that is particularly true of the one to which you are addressing yourself?

Mr. OWEN. No cure.

Mr. HELLER. And do you say these diseases cannot be successfully attacked privately; that the Government must come in to spend the money to do the job; is that your testimony?

Mr. OWEN. That is my testimony. We cannot raise enough money privately to handle this problem. We do the best we can, but we cannot raise enough money privately, and it is of such national importance that it must be tackled on a national scale.

Mr. HELLER. Yes.

Mr. OWEN. I say you can attack it, because the money that the Government would put on it is the income tax that comes out of the fellow who buys a loaf of bread. It does not come out of me.

Mr. HELLER. And you doctors and you fine people here today would not care what you called it; socialism or socialized medicine or anything else? You say, "Give us the money to help us find cures for these diseases."

Mr. OWEN. That is right. I don't know what they would say. I do not care. I do not think Dr. Bailey cares.

Mr. HELLER. I assume they take the same position.

May I ask a question of one of the doctors on the panel: Mr. Owen made the statement that the doctors fail to recognize the disease he just discussed and yet he very clearly and succinctly mentions the symptoms, enumerating double vision, staggering, tremors, weakness, bladder trouble, et cetera. What I cannot understand is that if you know the symptoms and you are able to analyze them so carefully and minutely, why can you not understand the problem and get at it and diagnose it?

Dr. TRAEGER. That is a good question and Mr. Owen suggested that that is true of the average doctor. It is not true of the average doctor alone; it is true of a good neurologist. The difficulty lies in the fact that these symptoms do not appear all at once.

You may have only one symptom. The patient may wake up one morning and be staggering a little bit. He might go to an orthopedic doctor. Or he may have trouble with his eyes and go to an eye doctor. Or he may have trouble with his bladder. Two or three days later that will clear up. Maybe 4 or 5 months later another symptom will come along.

The entire symptom picture, as you are familiar with it in pneumonia or polio, does not come at once. You may have one single symptom, and that may drag on for a long time.

Mr. HELLER. It is very progressive?

Dr. TRAEGER. It is very progressive, slow, variable, and goes up and down.

Mr. HELLER. It is alive and then dormant, and it takes a period of time? Is that your answer?

Dr. TRAEGER. That is right. There are some persons with multiple sclerosis who are really crippled and in 6 months are perfectly normal. Then there is nothing the matter, and then they get it again. The next time it is worse, and it goes on and on and on.

Mr. HELLER. In other words, if it is an injury to the brain, let us say, you can, as a result of the cells being killed, have a patient suffer a paralysis which may take 10 years before you recognize it as paralysis; is that what you mean?

Dr. TRAEGER. That is right; yes, sir. In 10 years usually the disease is so progressive that the diagnosis can be made. It is made within a period of years.

Mr. HELLER. The symptoms would appear maybe a year or 2 or even 10 years later?

Dr. TRAEGER. That is right.

Mr. HELLER. And there are cases where you can have paralysis as a result of a concussion or a brain injury 20 years after the injury?

Dr. TRAEGER. Surely.

Mr. HELLER. But you cannot diagnose it immediately?

Dr. TRAEGER. That is right.

Mr. HELLER. How is science able to do anything about it? I just cannot understand it. If it takes such a long period of time to make the proper diagnosis, you really are up against it. You cannot do it with X-rays; is that correct?

Dr. TRAEGER. You cannot do it by X-rays.

Mr. HELLER. All right. You have to do it clinically?

Dr. TRAEGER. That is right.

Mr. HELLER. Then how do you do it?

Dr. TRAEGER. One of the problems we are faced with in this situation is to find a blood test, like the Wassermann test in syphilis, for example, to apply to these patients who have these bizarre symptoms which are not related to multiple sclerosis. That would be a blood test or a spinal fluid test or some such test to make the diagnosis.

Mr. HELLER. A blood test or a spinal fluid test, as I understand it, has not proven conclusive, has it?

Dr. TRAEGER. Up to now, no, but that does not mean that they will not be.

Mr. HELLER. In other words, you feel you ought to continue with these experiments?

Dr. TRAEGER. By all means.

Mr. HELLER. Going into everything?

Dr. TRAEGER. Surely.

Mr. OWEN. The finding of a diagnosis that can be applied with certainty is one of our very great problems to which we are directing such research as we can.

Mr. HELLER. Mr. Owen, you also mentioned that the hospitals do not take these cases.

Mr. OWEN. Yes.

Mr. HELLER. I think you made that statement.

Mr. OWEN. That is right. Most hospitals will not take them because they are just there, you see.

Mr. HELLER. Well, from what I have been able to get from the testimony when they have this kind of a condition the doctors usually say, "All you need is a rest." I may be wrong. Some doctors I note are nodding their heads. I understand that is the way they tell us they can be cured.

If this is so why not get convalescent homes or some kind of homes for these patients with these diseases, instead of trying to put them into hospitals?

Mr. OWEN. They would if there were adequate convalescent homes. Of course, most of those convalescent homes are way beyond the means of the average patient.

Mr. HELLER. Practically, that would be the way to take care of them.

Mr. OWEN. It would. What they really need is nurse care, to be fed and lifted out of bed and have everything done for them.

Mr. HELLER. We cannot blame the hospitals, can we?

Mr. OWEN. I am not blaming the hospitals.

Mr. HELLER. I did not say you were. What I mean is that we can understand why the hospitals cannot take these cases.

Mr. OWEN. Certainly.

Mr. HELLER. There ought to be home care for them.

Mr. OWEN. There ought to be some kind of care. This client of mine that I mentioned, who got me interested in the disease, was a very rich man. Over the years, before his daughter finally died as a result of leukemia, after all of her problems started, he spent a great deal of money. She started out as a brilliant young girl, and I know that man spent $40,000 or $50,000 in hospitals, particularly in sanitariums.

Mr. HELLER. You would go along, then, with the Government perhaps having some kind of a plan whereby it would aid the various municipalities to build these homes and give them subsidies to help them keep abreast of this?

Mr. OWEN. I would, certainly.

The CHAIRMAN. I might say, Mr. Owen, as a Republican, I believe your type of republicanism is expressed in your answers here today.

Mr. OWEN. Thank you. That makes it unanimous, Mr. Chairman.

Mr. KLEIN. Mr. Chairman?

The CHAIRMAN. Mr. Klein.

Mr. KLEIN. Mr. Owen, I might say as a Democrat that I agree with your kind of republicanism, too.

Mr. HELLER. I should like to subscribe to it, also.

The CHAIRMAN. The committee is in favor of it.

Mr. KLEIN. You are very fortunate, sir, that you are not a doctor, because I believe that the organization which is doing most to prevent the Government from helping in the fight on diseases such as this, and in fact all illnesses, is the American Medical Association. I agree with you that where a person cannot afford medical care that somebody ought to give it to him, and I guess the Government is the logical organization to do it. But the American Medical Association has been the organization consistently that has opposed any help that the Congress or the Government could give to the medical profession. They say it is opening the door, to socialized medicine.

I agree with you. What is the difference what you call it? If we can give our people in this country better medical care than they can afford, and, of course, it should be done through the doctors, then it is our duty to do it. But I have said many times, and I hope some of these doctors will agree with me. I realize they are on a spot.

Dr. TRAEGER. I agree.

Mr. KLEIN. These doctors are afraid to speak their own minds, and the American Medical Association does not speak for the average doctor. I have talked to many of them. Unfortunately, they cannot speak up for themselves.

Mr. OWEN. Mr. Klein, are you a lawyer?

Mr. KLEIN. I am, sir. I am one of your competitors in New York City, too.

Mr. OWEN. No wonder it is hard for me to make a living.

You and I, of course, would object very strenuously if the Government started out to subsidize a lawyer for every case that came along. Whether rich, poor, or otherwise we would fight that. That might be the position of the doctors.

Mr. KLEIN. I agree with you, sir, but this is another problem. This involves the health and the well-being of our people. These gentlemen on this committee will bear me out. We have tried many, many times to help the medical schools of this country. We need more medical schools. The doctors themselves say we do. But when the Government wants to help them, many of them say, "We do not want the Government to come in, because they will tell us what subjects to teach." I think that is ridiculous.

Dr. TRAEGER. That is nonsense.

Mr. KLEIN. We ought to help all the people that need help.

The CHAIRMAN. I would like you to realize that after we have concluded our hearings on these different diseases which incapacitate so many of our population it is our intention then, starting probably the 15th or the 16th of this month, to direct our attention to the different programs which have been offered by way of assistance to individuals. That would include a study of the so-called Blue Cross, the Blue Shield, the Gray Cross, and whatever other kind there may be; and it will include what is being done by labor organizations to provide group insurance for their workers, and also what is being done in the way of group insurance in California under the Kaiser plan, and a plan that is being conducted and is the subject of some controversy in New York at this time, which I understand was originated or instituted in the first instance by Mr. LaGuardia, but which certainly is carried on now by the city of New York.

It is our intention to go into that phase of the question as well as this. So we hope to cover it in such a way that when we do make a report it may take into consideration all of these different elements which must be considered.

Mr. OWEN. I want to say my thanks, Mr. Chairman, to you and the committee. I think this is the most heartening hearing I have attended in a great many years. The interest you gentlemen have in the diseases and in every aspect of the problem is very heartening to all of us.

The CHAIRMAN. I will say for the committee that Mr. Owen has submitted here a considerable number of documents which deal in great detail with the multiple-sclerosis disease, and it is my intention, Mr. Owen, if these are available to the committee, to have our staff go through them and select those which would seem to be appropriate both from the standpoint of size and otherwise to be made a part of our hearings.

Mr. OWEN. Yes. Thank you.

(The information follows:)

ANNUAL REPORT, JANUARY 1, 1952, TO DECEMBER 31, 1952, NATIONAL MULTIPLE SCLEROSIS SOCIETY, NEW YORK 17, N. Y.

FOREWORD

Due to the relative youth of the society and the distressing lack of broad public knowledge of its birth, growth, and functions, it is fitting briefly to review its inception and progress, and thus emphasize the urgent need and warrant for broadened activities and substantially increased financial support.

Uniquely, the society was initially conceived by sufferers from multiple sclerosis, their families, relatives, and friends. Multiple sclerosis was a destructive disease respecting which there was no widespread knowledge. The organizers first sought to help themselves and their own. The accomplishments of the society now warrant a wide appeal for continuing and broadening its efforts.

The society was organized in 1946 as a result of a newspaper advertisement by a member of a family in which there existed multiple sclerosis. This advertisement requested all those interested in the disease to communicate with its author. As a result, $7,500 was raised, and an office was opened in a single room in the Academy of Medicine Building, New York City.

The stated purposes of the society as contained in its articles of incorporation under the laws of the State of New York, are—

> "To stimulate, coordinate, and support research into, and to obtain and disseminate information respecting the cause, prevention, alleviation, and cure of multiple sclerosis and other diseases of the nervous system;
>
> "To aid individuals who are in any way disabled as a result of multiple sclerosis or other diseases of the nervous system;
>
> "And to make grants of money from the funds of the corporation, at any time and from time to time, to individuals and to lawfully established agencies for the purpose of carrying out the foregoing objectives and for the prevention, diagnosis, treatment, alleviation, or cure of multiple sclerosis or other diseases of the nervous system."

While the society has accomplished a great deal in education, multiple sclerosis, or MS as it is now often referred to, is still a relatively new term in many vocabularies. But the disease itself is not new. The earliest case that is now clearly identified was that of Count Augustus D'Este, a cousin of Queen Victoria, who contracted the disease in 1822. He made a careful record of his symptoms: double vision, difficulty in balancing, numbness in parts of the body, extreme weakness, and bladder trouble—only a few of the symptoms and attendant problems that many patients face.

Apparently, multiple sclerosis is widespread, may strike without warning, in all walks of life, and tragically, most often between the ages of 20 and 40, when persons are in their most productive period of life. Amazingly, therefore, for over 130 years since the first identifiable case, and until the organization of the society, little, if anything, was known of the cause of MS or its possible cure. The organization of the society coincides with the first concerted attack on the problems presented by the disease. Progress has been extremely slow, but it is the unanimous conclusion of the society and its medical board that the results of research today warrant, and indeed demand, not only the continuation of projects underway, but an expanded program of research and broadened efforts for the relief of sufferers, through additional chapters of the society, clinics, education, and rehabilitation.

In the attached statement of the society, dated December 31, 1952, there emerges a convincing and stimulating story of an organization conceived and expanded through the efforts of patients themselves, their families, relatives, and friends. The appeal of the society is uniquely one from those who have first helped themselves, and with results which warrant and demand an appeal for greater assistance from the public generally.

From a modest beginning, the society has grown in a little over 6 years to a membership of approximately 23,000. To date, it has raised $1,093,539 of which $248,032 was raised in 1952. It has spent in research grants $448,531.80. According to a reliable survey by an independent agency, the society ranks very high, if not highest, in the percentage of expenditures for research as related to all expenditures. And it is very proud to state that it has a very low percentage of expenditures for administration as related to the aggregate of expenditures. As estimated for the year 1952, 45 percent of the aggregate of expenditures was for research; 18 percent for lay and professional education; 18 percent for medical and patient service; 10 percent for administration; and 9 percent for organization and development of chapters.

The society is deeply indebted to the following for their voluntary services: Charles Offset Co., printing of literature and posters; Willkie, Owen, Farr, Gallagher and Walton, legal services; Pandick Press, Inc., publication of membership bulletins; Melnick Bindery, binding of publications. It is in great measure due to their generosity that the society is able to devote so large a proportion of its funds to research.

Thus far, the society has supported 27 research projects and 8 research and treatment clinics. Operation of those not completed should be continued and additional projects and clinics initiated and supported.

The society's research program is formulated and coordinated by a medical advisory board of 50 outstanding physicians and rsearch investigators in the field of multiple sclerosis and related nerve diseases. It meets semiannually. In June 1952, for the first time, science writers were invited to attend the scientific session. This resulted in greatly increased information to the public concerning the research progress achieved under our grants.

Our medical director has organized a panel of 56 international corresponding neurologists from 26 foreign countries for the purpose of exchanging information.

A study group has been established of doctors and scientists, which in addition to neurologists, includes nutrition experts, biochemists, and the like and functions for the purpose of exploring possible channels of approach to the cause and cure of the disease.

In 1952 a series of four manuals on a home care program of rehabilitation was published and widely distributed to patients through their physicians..

There are now 21 chapters of the society and of these, six were organized in 1952. We are confident that more chapters will be of inestimable benefit, and that their organization is dependent only one adequate field personnel which we have heretofore not been financially able to engage. The projected program for 1953 contemplates increased effort in field organization, which we are confident can be successful and will result in great aid in accomplishing the purposes of the society.

There is attached hereto a balance sheet of the society as of December 31, 1952, and a statement of income, expenses, and grants of the society or the year ending December 31, 1952. These are certified to by Ernst & Ernst, accountants and auditors, 120 Broadway, New York, N. Y.

There is also attached hereto a statement, dated December 31, 1952, prepared by the society, concerning its accomplishments and its projected program. It is urgently requested that all interested in the society inform themselves of the illuminating facts in that statement—particularly those sections (pages 13 and 14) relating to past financial support and the financial support for 1953, which latter outlines a program for nationwide public appeal for financial assistance.

In recent years, science has found the answer to the prevention and control of diseases which, for centuries, have afflicted mankind. There is substantial ground for believing that multiple sclerosis may someday become one of such diseases. We look forward with confidence to the results that may be attained through the continuation and expansion of the work of the society.

And may I call attention to the attached forms which may be used in bequests and contributions.

WILLIAM C. BREED, Jr.,
Vice President.

Dated, December 31, 1952.

A STATEMENT FROM NATIONAL MULTIPLE SCLEROSIS SOCIETY, NEW YORK, "AARMS CONCERNING THE PROBLEM OF MULTIPLE SCLEROSIS ACCOMPLISHMENTS AND PROGRAM FOR THE FUTURE

Dated, December 31, 1952

The National Multiple Sclerosis Society was organized in 1946 by a group of patients, people interested in patients, prominent laymen, and outstanding members of the medical profession. All had a common bond of interest—multiple sclerosis. With different approaches, they conceived the society as a joint means of dedicating themselves to a common end—a program embodying research, clinics, education, and rehabilitation to aid and serve the thousands afflicted by this devastating disease.

The nature of multiple sclerosis—MS

Multiple sclerosis is a chronic nerve disease which affects the central nervous system by destroying areas of the myelin sheath which normally covers and protects the nerves. This destructive process, known as demyelination, interferes with the normal passage of nerve impulses through the body. At present there is no known way of replacing the destroyed myelin sheath. Victims of MS cannot function normally. Their symptoms vary with the degree and location of myelin destruction. Some of the more common symptoms are: double vision and other forms of impaired vision; staggering gait; weakness; numbness; tremors; bladder and bowel trouble; and emotional difficulties.

The course of the disease is unpredictable and mysterious. But it is usually progressive. However, it is characterized by attacks and remissions. With an attack, inherent in the progressive nature of the disease, there is an increased severity of symptoms. With a remission, there is a sudden improvement in symptoms. Most often, remissions are but transient blessings which end as mysteriously as they begin.

The prevalence

MS is not a reportable disease, therefore, there is no positive record of the exact number of cases in the United States. However, the National Institute of Neurological Diseases and Blindness estimates that there are approximately 300,000 persons in the United States today with chronic, progressive, multiple sclerosis and related demyelinating diseases. This is comparable to the estimated 250,000 persons suffering from the after effects of polio. The National Office of Vital Statistics in Washington, D. C., reported for 1949 (latetst available figure) that 1,379 persons died of multiple sclerosis. But undoubtedly this was an incomplete figure, since the disease is the basic cause of death in many instances where the listed cause of death is some other disease such as pneumonia, heart, circulatory failure and infections which had been brought on by MS. In comparison with the 1,379 multiple sclerosis deaths in 1949, according to latest estimates of the National Office of Vital Statistics, acute infantile paralysis killed 1,321 persons in 1951.

The victims

The victims of MS as usually stricken between the ages of 20 to 40. It is estimated, on the basis of current statistical information, that about 90 percent of all MS patients developed it before the age of 45—in the most productive period of their lives when they should be making their greatest contribution to their families and to society.

MS is not a prime killer. It is a foremost crippler.

Patients often have serious psychological problems. Their daily activities are severely limited. Many are confined to wheelchairs or are bedridden. They are dependent on others for help. They require understanding rather than sympathy. Tragedy enters the home when MS is present. The patient is often a financial burden to the family. Taking care of his daily wants is a strain and a hardship on the family.

Multiple sclerosis is a grave economic problem because millions of dollars, in terms of forced inactivity and man hours, are lost.

In many cases, group or individual therapy, under professional guidance is recommended. Several of the society's clinics offer group therapy to patients, but this is still on a limited scale and should be expanded.

The cause and effective treatment

The cause of MS is not known. Many theories regarding possible causes are being tested in the society's research projects.

There is as yet no specific curative treatment. Current forms of treatment are aimed at: (1) alleviating symptoms, mostly through the use of drugs; (2) rehabilitation, including physiotherapy to enable the patient better to attend to his daily wants and to live more productively; and (3) keeping up the general level of the patient's health. Healthful living, adequate and proper nutrition, and the avoidance of infections and emotional disturbances, are of great importance.

The climatic factor in MS has been under study. It has been observed that MS is more common in cold northern climates than in southern warm climates. This observation has indicated the need of further study to determine whether climate affects the course of MS as well as its prevalence.

One conclusion with respect to treatment is particularly worth noting. Treatments now offered for MS are helpful in some cases but not in others. The most successful of treatments, whether in the form of drug therapy, or physical medicine, do not appear permanently to alter the course of MS, but rather to afford symptomatic relief.

Research to find the cause and control of MS is of primary concern.

Accomplishments of the National Multiple Sclerosis Society

The society was formed to meet the great need of combating MS and counteracting long-standing ignorance and neglect. Discussion and investigation of the problems involved had been rather personal, individually pursued, and somewhat hushed. Research investigators with important ideas were discouraged because

of inadequate funds and the lack of clinical material. All this tended to inculcate in the multiple sclerotic a feeling that he or she was socially undesirable.

The primary purposes of the society are to provide—

Research, to find the cause and effective treatment of MS.

Clinics, to provide diagnostic services and treatment centers.

Rehabilitation, to allevrate disabilities and enable a sufferer to become a more useful member of society.

Medical education, to provide the medical and allied professions with vital information relating to diagnosis, research, and treatment.

Lay education, to inform the public of the problems involved and solicit help in the work of the society.

Chapters, to further the program.

Research

The society has thus far supported 27 research projects, and 8 research and treatment clinics at leading medical centers at a total cost of $554,246.58, including commitments. About 50 cents of each dollar of the society's funds have been allocated to basic and clinical research.

The society's research program is formulated and coordinated by a medical advisory board consisting of 50 outstanding physicians and research investigators in the field of multiple sclerosis and related nerve diseases. This board meets semiannually to exchange views, hear progress reports on research, and consider new applications for research grants.

In our present stage of knowledge, it is highly desirable to support studies of all worthwhile theories regarding MS. The research projects supported by the society cover many diversified fields.

	Approximate duration to date	Total grant
Study of immunology and allergy in MS, Columbia University and New York Neurological Institute, New York City.	5 years [1]	$54,126.29
Relationship between virus infection and myelin destruction, Tulane, University of Louisiana, and University of Minnesota Medical School.	3½ years [1]	40,500.00
Study of myelin destruction by histochemical methods, Massachusetts General Hospital and Harvard Medical School, Massachusetts.	3 years [2]	6,600.00
Effect of ACTH and cortisone on MS, New York Neurological Institute, New York City.	2 years [3]	5,000.00
Biochemical studies in MS, H. L. Snyder Memorial Research Foundation, Kansas.	2 years	29,273.88
Blood clotting in MS, Cedars of Lebanon Hospital, Los Angeles	1 year [3]	3,300.00
Study of demyelination, allergies, and instution of training program for neurologists and other investigators, Massachusetts General Hospital and Harvard Medical School, Massachusetts.	do.[1]	36,432.69
Study of adrenal function in MS, Peter Bent Brigham Hospital, Harvard Medical School, Massachusetts.	do.[3]	10,376.12
Study of possible infectious origin of MS, Southwest Research Institute of Applied Research, Texas.	do.[3]	20,000.00
National statistical survey with cooperation of U. S. Public Health Service	5½ years	27,036.37
Statistical study of the prognosis of known cases of MS, England	1 year [3]	404.28
Psychological study of MS patients, New York University-Bellevue Medical Center, New York.	1½ years [3]	8,726.34
Epidemiological investigations of MS in Winnipeg and New Orleans	1 year [3]	3,589.63
The course of disseminated sclerosis. A closeup of 105 attacks. Method for evaluating therapeutic approaches, Copenhagen, Denmark.	do.[3]	1,242.90
Study of cellular responses and sequences involved in areas of discontinuous destruction of myelin caused by JHM virus in central nervous system, Indiana University School of Medicine, Indianapolis.	1 year	8,450.00
Study to determine amino-acid patterns of the spinal fluids in MS and related neurological diseases, Boston University School of Medicine, Massachusetts.	6 months [3]	850.00
Study to develop a simple technique for the determination of protein changes in cerebro-spinal fluid in MS, Jewish Sanitarium and Hospital for Chronic Diseases, Brooklyn, N. Y.	1 year	6,000.00
Investigation of cerebral blood flow and intricate chemical changes occurring in MS and related demyelinating diseases, University of Miami Medical Research Unit, Miami, Fla.	do	5,000.00
Investigation by infrared absorption spectra and pertinent chemical analysis of the lipid and lipid soluble materials involved in the demyelinating diseases, University of Rochester Medical Center, Rochester, N. Y.	do	8,167.00

[1] Project taken over by U. S. Public Health Service.
[2] Project taken over by Kresge Foundation.
[3] Research project completed.

	Approximate duration to date	Total grant
Cerebral metabolic studies in MS, University of California School of Medicine, San Francisco, Calif.	1 year	$5,687.75
Serological studies in MS, Neurologische Universitatsklinik, Hamburg-Eppendorf, Germany.	do	2,056.64
Experimental work involving culturing of micro-organisms from spinal fluids in culture medium, Philadelphia, Pa.	6 months	1,000.00
Studies in the etiology of multiple sclerosis, dealing with the problems of the infectious nature of the disease, suspecting a virus as the infective agent, University of Buffalo School of Medicine, Buffalo, N. Y.	1 year [4]	26,954.00
Study to observe the effect of vasodilating drugs on new symptoms of multiple sclerosis, Columbia University, College of Physicians and Surgeons, New York City.	8 months	1,000.00

[4] Research project inaugurated after Dec. 15, 1952, for 1 year.

The research program is considered outstanding. According to a survey covering 18 leading voluntary health organizations in 1951, the National Multiple Sclerosis Society ranks first in the percentage of funds allocated to research. It is believed the year 1952 reflects relatively the same record of performance.

Clinics

In addition to the research projects listed above, eight multiple sclerosis research and treatment clinics have been established by the society. The clinic is a pioneering innovation in the traditional treatment of multiple sclerotics. An MS clinic provides a center where multiple sclerotics may receive diagnosis, treatments which may be helpful, and physiotherapy. It is an adjunct to research which needs patients for evaluating experimental forms of therapy.

Clinics now in operation

	Duration to date	Amount of grant
New York University—Bellevue Medical Center, New York City	3½ years	$121,151.19
Montefiore Hospital, New York City	4½ years	17,424.00
Massachusetts General Hospital, Boston	1½ years	[1]
Boston State Hospital, Boston, Mass	5 years	103,897.50
Detroit Memorial Hospital, Detroit, Mich	2 years	[2]
Battle Creek Clinic, Battle Creek, Mich	½ year	[2]
Snyder Jones Clinic, Winfield, Kans	1½ years	[2]
Cedars of Lebanon Hospital, Los Angeles, Calif	2 years	[2]

[1] Grant included in research project on demyelination, allergies, and training program.
[2] Supported by chapters in those States.
[3] Grant included in research project on biochemical studies in MS.

Addendum to annual report, pp. 10–13, research projects supported by the National Multiple Sclerosis Society, Jan. 1, 1953, through Dec. 31, 1953

Investigator and institution	Title of project	Amount of grant
Warren M. Sperry, Columbia University.	A quantitative study of the lipides of the nervous system during myelination and demyelination.	$8,775
Burnham S. Walker, Boston University School of Medicine.	Study to determine amino-acid patterns of the spinal fluids in multiple sclerosis and related neurological diseases.	9,720
Hans H. Reese, University of Wisconsin Medical School.	Investigation of the ground substance in the central nervous system in its relationship to functions of the glia.	600
Hans H. Reese, University of Wisconsin Medical School.	Extension of preliminary studies on polymorphonuclear leucocytes in which abnormality (Hargraves' cells) have been found warranting more detailed study.	600

Rehabilitation

The need for rehabilitation to cope with the disabilities manifest in MS is great. The society has published a rehabilitation manual, which has been distributed without charge to over 17,000 physicians and physiotherapists. Because of the pressing need for a "home care" program for patients, the society has published manuals for patients in all stages of the disease. These are intended to supplement the rehabilitation manual for physicians and are being distributed to patients through their doctors without charge.

Medical education

The society has become the recognized clearinghouse for information the world over on multiple sclerosis. Hundreds of letters are received from medical and nursing personnel asking our opinion on certain forms of treatment and other information.

A medical manual containing information on current developments in multiple sclerosis has been published. This manual, which is revised periodically, is distributed to 28,000 physicians on our medical mailing list and to all other interested physicians.

To reach the nursing profession, a reprint of an article appearing in the American Journal of Nursing, which gives guidance to nurses in the care of multiple sclerotics, has been distributed to interested nurses.

The society has organized a panel of international corresponding neurologists consisting of 56 neurologists from 27 countries. The purpose of the panel is to keep all research centers and investigators in the world posted on developments in the field.

Lay education

An important function of the society is to inform some 23,000 members of its activities. A quarterly bulletin, AARMS Forward, not only informs members but also serves as a morale stimulant to patients and their friends.

Educating the public is difficult because of past neglect and public ignorance of MS, but there is great encouragement in the progress made as a result of the society's educational program. Many more people than ever before know something about MS, and its problems are being publicly discussed and studied.

Chapters

Twenty-one chapters of the society are located in Alabama, California, Connecticut, District of Columbia, Kansas, Massachusetts, Michigan, Minnesota, Nebraska, New York, Ohio, Pennsylvania, Vermont, and Wisconsin. The function of these chapters is to provide essential services to patients and to aid in carrying out the program of the society. To organize more chapters is dependent only upon adequate field personnel which the society has heretofore not been financially able to engage.

Past financial support

In the initial years of the society's existence, patients and their families and relatives assumed its financial support. Obviously, this placed severe limitations upon its program, since contributors were not large in number, and many of the patients were either not earning a livelihood or were compelled to save against a day of incapacity to work.

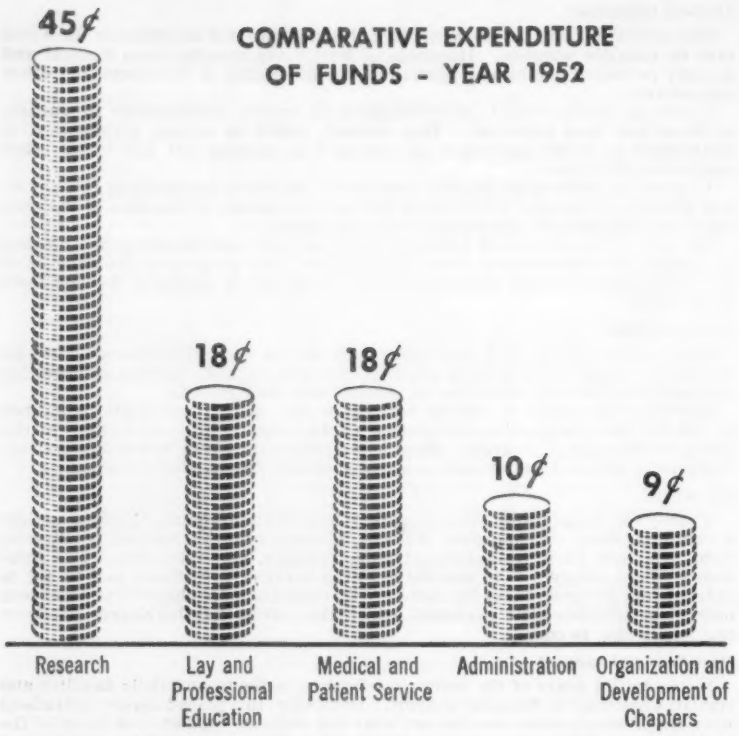
Later the nucleus of initial contributors was expanded by patients, their families and relatives seeking aid from their friends—and this primarily on the basis of membership dues ranging from $3 upward, with complimentary membership to patients who were unable to afford dues.

The society has literally been built and its work largely maintained through the funds and efforts of those whom it seeks to aid. It is unique, and it is deserving of widespread interest and support because its research, educational, and rehabilitation program has evidenced a progress which warrants, if not, indeed, demands, a nationwide appeal for support of broadened plans.

Financial support for 1953

Particularly it is essential to continue and broaden research. It is worthy of note that in 1952 approximately 45 percent of funds received in the year were spent for research, 18 percent for lay and professional education, 18 percent for medical and patient services, and only 10 percent for administration, and 9 percent for organization and development of chapters.

The directors and medical advisory board of the society, in the light of demonstrated need for continuing existing research projects, inaugurating other such projects and expanding the educational and rehabilitation program of the society, and developing additional chapters, urgently require a broader base of financial support and an appeal generally, on a nationwide basis, for financial aid to the society and its chapters. Accordingly it is the plan of the society to launch in March 1953 a nationwide appeal in an effort to raise an aggregate of $1,200,000 through the efforts of the society and its chapters and for the use of the society and its chapters.



ACCOUNTANTS' REPORT

BOARD OF DIRECTORS OF NATIONAL MULTIPLE SCLEROSIS SOCIETY,
New York, N. Y.:

We have examined the balance sheet of National Multiple Sclerosis Society (national headquarters) as of December 31, 1952, and the related statement of income, expenses, and grants for the year then ended. We did not examine the financial statements of the chapters of the society. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. It was not practicable for us to confirm by direct communication dues and contributions received from members or others, with respect to which we made test checks of records of dues and contributions with duplicates on file of receipts issued to contributors. Funds received from chapters of the society were confirmed to us by direct communication or accounted for by inspection of advices or reports on file.

The accounts of the society are maintained on the receipt and disbursement basis of accounting.

In our opinion, the accompanying balance sheet and statement of income, expenses, and grants present fairly the assets and fund balances of National Multiple Sclerosis Society (national headquarters) at December 31, 1952, and its income, expenses, and grants for the year then ended, on a basis consistent with that of the preceding year.

ERNST & ERNST.

NEW YORK, N. Y., *March 4, 1953.*

Balance sheet—National Multiple Sclerosis Society (national headquarters)—Dec. 31, 1952

ASSETS

General and other funds:	
Cash in bank and on hand	$39,620.24
Due from broker, for securities sold	5,319.16
Due from others	871.42
	45,810.82
Research fund:	
Cash in bank	23,054.07
Due from broker, for securities sold	10,972.54
	34,026.61
	79,837.43

FUND BALANCES

General and other funds:	
General fund	$43,559.49
Other, for designated purposes	2,251.33
	45,810.82
Research fund [1]	34,026.61
	79,837.43

[1] Commitments for research grants amounted to approximately $65,715 at Dec. 31, 1952.

Statement of income, expenses, and grants—National Multiple Sclerosis Society (National Headquarters)—Year ended Dec. 31, 1952

	Research fund	General fund	Medical directors' fund	Fund for designated purposes	Total
Balance at Jan. 1, 1952	$15,336.43	$29,922.01	$6,466.65	$2,251.33	$53,976.42
Income:					
Dues and contributions:					
Contributions from chapters of the society	26,425.14	37,226.02			63,651.16
Dues and contributions from members and others	67,475.96	111,905.53	5,000.00		184,381.49
Transfer between funds	25,149.16	(25,149.16)			
Total income	119,050.26	123,982.39	5,000.00	0	248,032.65
	134,386.69	153,904.40	11,466.65	2,251.33	302,009.07
Expenses and grants:					
Expenses:					
Service projects		8,369.76			8,369.76
Medical department services		19,433.25	11,466.65		30,899.90
Lay and professional information and education		23,662.69			23,662.69
Organization and development of chapters		18,854.91			18,854.91
Promotion		18,345.29			18,345.29
General administration		21,679.01			21,679.01
Total expenses		110,344.91	11,466.65		121,811.56
Research grants	100,360.08				100,360.08
Total expenses and grants	100,360.08	110,344.91	11,466.65		222,171.64
Balance at Dec. 31, 1952	34,026.61	43,559.49	0	2,251.33	79,837.43

Dr. TRAEGER. Mr. Chairman, may I crave your indulgence for just another few minutes to give Dr. Bailey an opportunity to tell the committee something about some of the other neurological diseases and the research and training program at the National Institute?

The CHAIRMAN. Certainly.

Dr. TRAEGER. Thank you, sir. Dr. Bailey.

STATEMENT OF DR. PEARCE BAILEY, DIRECTOR OF THE NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS

Dr. BAILEY. Mr. Chairman, I realize that time is very short, but I think these diseases should be mentioned. I do not think they are considered as a group under any written statement.

That is, we have heard a lot of testimony from various voluntary agencies which are interested in diseases. We at the National Institute of Neurological Diseases and Blindness are very intent on pursuing the research attack on all those diseases, but we also have the national responsibility for diseases that are not represented by any organized group. Some of these diseases take a very shocking toll in death and economic loss to the country.

I will just mention these diseases. If you would like, a short statement could be prepared for the record.

The first one is apoplexy or stroke, which accounts for about 170,000 deaths a year in this country. For this disease, so far as I know, not much over $200,000 a year is being spent in research. A stroke has such neurological aspects that have never been investigated that they should be undertaken because of the death toll as soon as possible.

In addition to the death toll, there are present in this country 1.8 million hemiplegics resulting from stroke or apoplexy. As you know, this disease hits big people and little people. It is nonpartisan in its approach.

A second disease is Parkinson's disease, or the shaking palsy, which is a progressive disease involving a certain part of the brain, with several causes. It is a very disabling disease; it is common.

The research effort, for instance, from the entire Public Health Service, only amounts to about $90,000.

A third element is accident and injury to the nervous system, which is injured in about 6 to 10 percent of all accidents. You might say that you could bring that up with regard to any organ, but I bring that up particularly because the central nervous system when damaged causes a loss which is irreparable—a fact we brought up before. The importance of continuing research into regeneration of nerve fibers is involved.

Let us take one example: Paraplegia, which, you all know, means paralysis from the waist down, is a good case in point. In World War I there were 400 paraplegics. Within 6 months 50 percent of them were dead.

Now, due to improved methods, about 2,500 paraplegics survived out of some 3,000 plus in World War II. The estimate of the paraplegic population in the United States is between 80,000 and 100,000 people completely paralyzed from the waist down.

An insurance company has estimated that 1 paraplegic in indemnity and hospital cost will amount to $400,000 for that insurance company. That is under a custodial-care program.

I particularly mention paraplegia because as work in nerve regeneration is successful, it is probable it will be applied first to the spinal cord which is a lot simpler in its structure than the brain.

Thank you.

The CHAIRMAN. Doctor, I would like for you to feel free to add to your testimony whatever you might wish to prepare to be made part of the record. I note that there is a general statement prepared on neurological and sensory disorders by the National Institute of Neurological Diseases and Blindness of the National Institutes of Health; but if there is anything in addition to that you wish to make a part of this record please feel free to do so.

Dr. BAILEY. Thank you, Mr. Chairman.

(The prepared statement of Dr. Bailey follows:)

NEUROLOGICAL AND SENSORY DISORDERS

(Prepared for hearing of the House Committee on Interstate and Foreign Commerce, October 7, 1953, by the National Institute of Neurological Diseases and Blindness, National Institutes of Health, Public Health Service, United States Department of Health, Education, and Welfare)

THE PROGRAM OF THE NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS

The National Institute of Neurological Diseases and Blindness is the newest of the National Institutes of Health of the Public Health Service, having been created in response to public and professional demand by Public Law 692 in August 1950. No appropriation, however, was made available to activate the Institute until 1951 when $1,250,000 was appropriated to initiate a program of research.

The National Institute of Neurological Diseases and Blindness leads and coordinates the research and training programs in neurological and sensory disorders in the National Institutes of Health under the Public Health Service. It directly administers these programs of research and the support of research and training in universities and other non-Federal institutions. It also serves as a focal point for research and training in rehabilitation activities throughout the National Institutes of Health.

NATURE AND SCOPE OF THE PROBLEM

The relative youth of the Institute does not truly reflect the size and nature of the problem with which it is faced. As a distinct group of disorders, neurological and sensory diseases do create an extremely serious public health problem. They affect approximately 20 million persons in the United States alone, of whom at least one-half endure gravely disabling conditions. While only the third cause of death (after heart disease and cancer), it is probable that no other group of disorders causes such permanent crippling, and this crippling is usually so severe as to cause profound psychological, social, and economic dislocation for the individual sufferer. In general, these are disorders of the nervous system and of the critical sense organs—vision and hearing. More specifically, they include a broad spectrum of different disturbances, such as cerebral palsy, multiple sclerosis, epilepsy, muscular dystrophy, Parkinsonism, and injuries to the brain and spinal cord. Among the sensory disorders are glaucoma, cataract, and many other conditions causing partial or total blindness and deafness.

The problem posed by neurological and sensory disabilities is a difficult one. The nervous system is the most complex and widely dispersed system of the body and until recently the most inaccessible to study. But, in spite of its relative inaccessibility to study, it is, unfortunately, particularly vulnerable to disease and injury.

Moreover, neurological disabilities once developed are frequently permanent disabilities for central nervous system tissue, which unlike other tissue of the body, such as the skin or liver, when once definitively damaged never repairs spontaneously. For this reason, victims of neurological disorders constitute a tremendous drain on the economy of the country—not only in terms of manpower,

wage losses, productivity, and tax revenue, but as an additional burden placed on local community and family resources. At present, a survey of the economic drain on the country's resources resulting from these disorders is being conducted by the National Committee for Research in Neurological Disorders.

RESEARCH IN NEUROLOGICAL AND SENSORY DISORDERS

Before the discovery of sulfonamide drugs and antibiotics neurological research was concerned chiefly with clinical descriptions and autopsy studies. Nothing further was accomplished—neurology during those times was not much more than a scientific cogitation of disability and death.

With the discovery of new drugs and penicillin, many of the infectious diseases of the nervous system were capable of being controlled. Neurosyphilis, and bacterial infections of the nervous system such as epidemic meningitis were practically wiped out. At the same time brilliant advances were made in surgery on the nervous system and the eye—advances which gave to this country leadership in brain surgery and which comprise one of the most dramatic chapters in the history of surgery.

These achievements in infectious diseases and surgery led to the development of new precision instruments to make the nervous system and the eye more accessible to investigation and to new experimental methods in fundamental neurological sciences to probe deeper into the basic nature of the structure, development, chemistry, and physics of the nervous system and its sensory endings. To illustrate, we can point to the development of air encephalography, a technique for outlining the ventricles of the brain; to the development of angiography, by means of which the blood vessels of the brain become visible in an X-ray picture; to the discovery of the electroencephalograph, a precision instrument which records the electrical beats of the brain; and to electromyography which registers the electrical potential of neuromuscular action. The development of these precision instruments, together with the discoveries in biophysics and biochemistry, opened up new vistas for research in neurological and sensory disorders.

These new discoveries, encouraging as they were, still left large areas of crippling neurological and sensory disorders untouched. Still unsolved were some of the worst neurological disorders of mankind—cerebral palsy, apoplexy (or stroke), multiple sclerosis, muscular dystrophy, Parkinson's disease, the effects of brain and spinal cord injuries (including paraplegia), and loss of language functions. Among the sensory disorders are cataract, glaucoma, and a type of early blindness of prematurely born infants called retrolental fibroplasia.

The tremendous toll in suffering, disability, and cost exacted by these disabling conditions eventually led to a surge of public interest in this relatively neglected field. New voluntary health agencies bound to categorical neurological diseases were formed and for the first time many neurologic patients were able to shed the cloak of social shame, behind which they had hidden for years, and were able to have their stories heard. It was at about this stage in the history of neurologic research that the National Institute of Neurological Diseases and Blindness was formed.

OBJECTIVES

The broad objectives of the Institute's program are: (1) To search for and find improved methods for the diagnosis, prevention, treatment, and rehabilitation of neurological and sensory disorders; (2) to improve professional competence in these fields in order to reduce the suffering, disability, death, and economic loss caused by these disorders; and (3) to participate in the national collaborative effort to combat neurological and sensory disorders.

To achieve these objectives the Institute has developed extramural research and training programs to support research projects and training programs in non-Federal institutions; and an intramural laboratory and clinical research program to be conducted in the laboratories and at the Clinical Center in Bethesda.

RESEARCH GRANTS PROGRAM

This program supports research on neurological and sensory disorders in universities and other non-Federal institutions. The largest part of this research project support has concerned the major disease categories such as multiple sclerosis, epilepsy, muscular dystrophy, cerebral palsy, glaucoma, cataract, and retrolental fibroplasia. In addition to these distinctly clinical projects, the

Institute also supports other projects dealing with the processes fundamental to the understanding of many of the pathophysiological processes of the nervous and sensory systems. This latter type of research support is focused toward providing clues to the basic mechanisms underlying many of these disorders.

In the fiscal years 1951 through 1953, the Institute was able to support from its approved applications 268 projects in the amount of $2,280,000. A classification of the various types of projects supported by the Institute, together with a corresponding financial breakdown, is set forth on pages 1 through 3 of the appendix.

Because of the multiplicity of neurological and sensory disorders, the requests for research grant support in these areas far exceed the present resources of this Institute. For example, the estimated demand for the current year was $4,500,000 against an available appropriation of $2,700,000. There is every indication that approved applications during fiscal year 1954 will exceed that forecast. (For explanation of estimates see p. 4 of the appendix.)

There is general agreement that subsequent to the initiation of this Institute's research grants program there has been a mounting interest in research in the neurologic and sensory disorders, not only in the programs directly sponsored by this Institute but also in the grants-in-aid provided by voluntary health organizations. Apparently the development of the Institute's broad research grants program has stimulated additional support for foundations, voluntary health organizations, and private philanthropies dedicated to combating these crippling diseases.

TRAINING PROGRAMS

A difficult problem for the program of this Institute to meet has been the urgent need for better facilities in the graduate training of clinical teachers and researchers in neurological and sensory disorders. It is a generally accepted principle that research and training are merely different points on the same assembly line. Both points must be continuously active if a constructive research program is to endure. Unless the scientist in the laboratory can rely on a pool of young scientists-in-training, his program will not survive for long. Similiarly, if there is not a source of young clinical researchers-in-training, important laboratory discoveries may remain concealed for years before they can be tested in the clinic.

With minor exceptions, the current facilities in our medical schools for postgraduate training of teachers in neurological and sensory disorders are seriously inadequate. Only about a third of all the country's medical schools have complete neurological units for teaching physicians and scientists. Many of our neurological teachers are not qualified neurologists, and many States in the United States do not have a single qualified neurologist.

Funds have been made available to this institute for the support of graduate medical training grants for the first time in fiscal year 1954. This sum ($400,000) will serve to support 20 programs among the total that may be submitted from our country's 80 medical schools. We have already received requests amounting to $300,000 more than the total available to us.

Besides the training grants program, the institute has a research fellowship program which supports 39 postdoctorate and special fellows in the broad fields of neurology, ophthalmology, otology, rehabilitation, and neurological surgery. At present we are able to support about 1 of every 6 highly qualified applicants for training in this important field of investigation.

The final part of our postgraduate training program concerns stipends (traineeships) to increase the number of highly trained personnel who will develop into competent teachers of the clinical and rehabilitation aspects of neurological and sensory disorders. Currently, we are supporting 20 such trainees. An additional 20 highly qualified individuals could be placed immediately.

SPECIAL PROJECTS

The development of diagnostic techniques and of treatment in any medical field constitutes a major problem. This is particularly true in relation to the neurologic and sensory disorders. Because of the chronic, long-term nature of these disorders, fundamental findings from the laboratory must be translated into clinical application at the earliest possible moment. There is an acute need for special projects designed for the clinical testing, evaluation, and establishment of diagnostic methodologies and approved treatment schedules. Projects of this type are usually located in a clinic and then typically proceed not only on the clinical level, but also exist as demonstration projects. Techniques developed in

the project are taught to specialists, general practitioners, and allied medical personnel. After observing and perfecting themselves in the new techniques of diagnosis and therapy of these diseases, they later incorporate these added skills into their own private practice. In the field of neurologic and sensory diseases, these demonstration projects are urgently needed now for such disorders as multiple sclerosis, epilepsy, cerebral palsy, muscular dystrophy, leprosy, bulbar poliomyelitis, glaucoma, and retrolental fibroplasia. These demonstrations are valuable not only in advancing diagnosis and therapy, but in improving rehabilitation techniques. Until recently the extent to which lareg groups of these patients could be rehabilitated had been grossly underestimated, and as techniques are improved the proportion who can be rehabilitated will increase.

RESEARCH ACCOMPLISHMENTS

When the National Institute of Neurological Diseases and Blindness was founded in 1950, a number of new discoveries in the field of neurological and sensory disorders had secured the scientific beachhead indispensable to an effective large-scale research offensive. The creation of air encephalography, electroencephalography, and electromyography provided new diagnostic tools, without which much further work would have been impossible. The introduction of radioisotope tracer techniques for the diagnosis of tumors, and other lesions of the brain marked another advance whose potentialities are far from exhausted. The discovery of new chemical complexes in the nervous system provided a clue, not yet tracked down, to the basic mechanisms of multiple sclerosis. Recent studies on pregnant mothers may help unravel the mysteries of cerebral palsy.

The creation of this Institute, through its direct or indirect support, has given impetus to the exploitation and elaboration of these lines of research. As an example, new antiseizure drugs have been developed so that 80 percent of all epileptic seizures can be controlled. Prior to the use of neostigmine, myasthenia gravis was often rapidly fatal—about half of the patients died within weeks or months after the diagnosis was made. Now 80 percent of these patients at all ages, if adequately maintained on neostigmine, may expect to survive the disease.

In the 2½ years during which the Institute's research grants program has been actively in existence, not only have current ideas been more effectively exploited but additional findings of great potential significance have been made.

Grantees at the University of Utah, for example, have found that the adrenal hormone, desoxycorticosterone, greatly increases the effectiveness in animals of antiepileptic drugs presently in use, in some case extending their antiseizure activity more than 10 times the usual period. If these same results obtain for humans, another significant step toward the practical control of epilepsy will have been made.

At the University of Tennessee, investigators under Institute support have been establishing the normal brain activity of newborn infants through the use of the electroencephalograph. This technique has already permitted the investigation of those factors occurring during labor and delivery which might adversely affect the brain of the child.

Further investigations at the Harvard Medical School under a grant from the National Institute of Neurological Diseases and Blindness have cast light on when various parts of the developing nervous system of the embryo are most liable to damage and the exact nature of the damage incurred. Such findings may lead to further modes of prevention of such disorders as epilepsy and cerebral palsy. As further information concerning the biochemical and metabolic changes occurring during embryonic development is derived, new modes of treatment may evolve.

At Columbia University researchers have been able to successfully grow outside of the body nerve tissue capable of carrying electrical impulses. This technique provides an invaluable method for studying the composition of nerve cells. More significant, it offers promise that the functional regeneration of nerve tissue will become a reality.

In the field of ophthalmic research, substantial research accomplishments have also been made under the Institute's support.

At Georgetown University, substantial evidence suggests strongly that prolonged and high oxygen normally given to premature infants in hospital nurseries plays the most significant role in the development of retrolental fibroplasia, the leading cause of blindness in children. (The work at Georgetown has stimulated the establishment of a broad research project under the support of the

Institute, in cooperation with the National Society for the Prevention of Blindness and other agencies, which will undertake to obtain a decisive yes or no answer concerning the causative role of oxygen administration.)

At the Harvard Medical School, a grantee has developed the electrical tonometer, which now provides a method for measuring continuously the facility and rate of flow of aqueous humor in the eyes of patients. This technique both assures the accurate diagnosis of the type of glaucoma and provides an invaluable tool for the investigation of the causes of this disorder.

The development of an artificial plastic cornea at the Massachusetts General Hospital shows considerable promise that a replacement for damaged corneas may be obtained. (The present method of replacing damaged corneas through corneal transplant usually fails in 60 to 70 percent of the cases because the transplant clouds over.)

EYE RESEARCH

So far, we have spoken of the broad category of neurological and sensory disorders. Within this category is research on the important sensory end organ of the brain—the eye. Since the function of the eye is so critical to productive life adjustment, research in this field merits special commentary.

Sixty Americans become blind each day—420 each week—22,000 each year. Defective eyesight costs our country about 7 percent of her potential military manpower, and slows down the production efforts of nearly 40 percent of her industrial workers. To prevent this distressing social and economic burden, the causes of blindness must be attacked. This objective demands an understanding of the diseases which lead to visual loss. It is not surprising that the causes of blindness in children differ greatly from those for adults, and that relative changes in the incidence of the blinding eye disorders in both groups have been evident in recent years as the impact of medical research has made itself felt. For example, there has been a 54-percent drop in blindness of children due to venereal disease since 1936; and a 96-percent reduction in blindness from babies sore eyes since 1908.

Current analysis of blindness in children shows that 50 percent are due to prenatal defects and retrolental fibroplasia: 16 percent are hereditary in nature; 14 percent are due to infectious diseases; 7 percent are due to injuries; and 14 percent are due to miscellaneous causes such as tumor and general diseases. (See diagram in appendix, p. 5.)

In the adult age group, causes of blindness may be divided as follows: 25 percent due to cataract; 12 percent due to glaucoma; 16 percent due to opacity of the cornea; 15 percent due to primary cranial nerve disorders; 12 percent due to affections of the choroid and retina; 11 percent due to various affections of the eyeball; and 2 percent of miscellaneous causes. (See diagram in appendix, p. 6.)

Cataract is most common in people over age 50 and hits peak incidence at age 60. Census estimates tell us that by 1960 we will have a 250-percent increase in the number of people in this age group over the 1900 census.

More than 1 person in 50 of all people over age 40 suffer from glaucoma. With our present population we may estimate that 800,000 people suffer from this disease. By 1960 our aging population will have placed one-third of all people in the glaucoma age group. Uveitis, or infection of the inner eye, accounts for 12 percent of blindness in adults and corneal opacity for 16 percent.

Although no aspect of blindness has been neglected in the program of the National Institute of Neurological Diseases and Blindness, it has largely focused attention on the major economic problems in these early months of existence. Cataract, glaucoma, uveitis, retrolental fibroplasia, and prenatal defects are the items of major concern.

INTRAMURAL RESEARCH PROGRAM

In the laboratories, including the new clinical center in Bethesda, the research program is geared to finding improved methods of diagnosis, prevention, treatment, and rehabilitation of neurological and sensory disorders with special reference to epilepsy, cerebral palsy, multiple sclerosis, muscular dystrophy, glaucoma, cataract, and retrolental fibroplasia. The potential facilities of the Bethesda program provide a unique opportunity for the first telling attack on these crippling disorders.

To unravel fully the basic mechanisms of the nervous system and its wide ramifications throughout the body—extending from its apex, the brain, to all

organs of the body and their important sensory endings, will require cross-fertilization of newer technics developed from many disciplines in all the clinical and basic sciences. And it is this type of unique cross-fertilization that the clinical-center facilities were designed to give.

This cross-fertilization of clinical and laboratory disciplines within the Institute and among all the National Institutes of Health will make possible the first complete frontal attack in history against neurological and sensory disorders. Such a comprehensive attack, we are convinced, will eventuate in "yes" and "no" answers to the problem of the crippling disorders which is our responsibility to resolve. But the practical consequences in research to be achieved by the work in the Bethesda program are not its only contribution. In fact, it might well be that its greatest contribution will reside in the stimulus and special facilities it offers to visiting scientists from all parts of the country, who may come to Bethesda, participate in the program, and then return home with fresh concepts and technical formulations for their own special projects.

Keeping this orientation in mind and the fact that neurologic and ophthalmic disorders are more closely coupled to basic anatomy, physiology, and chemistry than other areas of investigation, the Institute's clinical staff has been organized along the principles of a research team approach aiming to attack specific disease areas. The majority of the members of the clinical research team have both medical and basic science degrees, thus preserving a solid link between clinical and laboratory research in clinical problems and an intimate liaison of the clinical program as a whole with the program in basic laboratory research, which we shall outline later.

It is, of course, the ultimate objective to attack, eventually, all the major disease areas in the neurologic and ophthalmic field. However, in its present organizational phase and with resources at its disposal, the Institute can investigate only some of the many "gap" areas in neurologic and ophthalmic research.

Accordingly, the neurology investigative program will concentrate its efforts during fiscal year 1955 on that group of disorders generally known as neuromuscular. This group comprises muscular dystrophy, myositis, dermatomyositis, myotonia, myasthenia gravis, and amyotrophic lateral sclerosis. Most promising research needs in these disorders concern their underlying pathophysiological and chemical factors. To tackle this problem, a clinical research team has been organized consisting of scientists qualified in neuromuscular chemistry; unstable isotopic techniques (to trace ionic metabolism in these diseases); and personnel trained in the electronics of nerve and muscle conduction and in the application of pharmacological agents. This clinical team will attempt to determine the factors which influence the basic mechanism of neuromuscular disorders. Chemical studies will be performed on the primary muscular proteins, particularly myosin and actin which, when reacting with a chemical termed "adenosine triphosphate," forms one of the bases of neuromuscular contraction. Studies of the effect of radioactive potassium (K_{42}) on the contractile power of these muscle proteins will be specifically studied and correlated with electrical responses.

As part of the same program, in the clinical follow-up area, an investigation and evaluation by means of electromicrophoresis of protein excreted at the cerebrospinal axis, particularly in the study of multiple sclerosis, will be undertaken. It is hoped that these studies will supply clues to the basic mechanisms involved in neuromuscular activity both in health and disease.

Paralleling these medical investigations, surgical studies will be made of epileptic patients whose seizures cannot be controlled by modern medical therapy. During surgery, extensive recordings will be taken with a conscious patient's response to electric stimulation of the brain, with special reference to the effect on memory, speech, perception, and sensation. Such pathological tissue as is removed at surgery will be subjected to chemical analysis and, on the basis of these findings, new approaches to the medical treatment of epilepsy will be made. Finally, investigations will be undertaken for the surgical control of the incapacitating involuntary movements often displayed in patients with cerebral palsy.

In the intramural program in eye research, emphasis will be placed on the major causes of blindness—cataract, glaucoma, uveitis, retrolental fibroplasia, and prenatal defects. Other disorders will be studied later. Each clinical investigation will be paralleled by simultaneous and analogous studies on animals. A well-equipped clinical laboratory has been planned and is to be staffed with specialists in optics, biochemistry, bacteriology, and pharmacology. The effects of new drugs on glaucoma are to be studied.

A keynote of the eye program is collaboration with the other institutes. For example, the National Institute of Microbiology provides special serological testing in the studies on uveitis; the National Heart Institute provides patients and special materials for research on hypertensive retinopathy; and the National Institute of Arthritis and Metabolic Diseases wishes to collaborate in studies on diabetic retinopathy.

Extensive researches have been planned on cataract, corneal opacity, glaucoma, and uveitis. Local institutions have indicated their willingness to provide patient material. A clinic for crosseyed children has been placed in operation at Howard University, and other studies will be conducted at Gallinger Hospital, Georgetown University, and the Episcopal Eye and Ear Hospital. Various practicing physicians are cooperative in offering to provide patients.

These clinical programs in neurologic and ophthalmic research are centered on the patient with a specific disease. The studies are carried out both at the bedside and in the clinical laboratory. The results of these studies are continually correlated with a program in basic laboratory research whose principal objective is to discover more fundamental knowledge on the working of the nervous system in health and in disease. There are numerous instances in the history of medical achievements to substantiate the thesis that basic as well as clinical research is essential for the conquest of disease. The discovery of insulin for the treatment of diabetes was accomplished by a program in basic research which pointed to the pancreas as an essential organ in sugar metabolism. Methods for the extraction and testing of secretions from the pancreas were developed in the course of the basic studies. The application of these findings to the patient with diabetes was only the last though the most dramatic step in the successful control of diabetes.

The basic research program of the Neurology and Blindness Institute at Bethesda is administered jointly with the program of the National Institute of Mental Health under a single scientific director, who is an international authority on the circulation of the brain. This joint program has established laboratories in the neuroanatomical sciences, physiology, neurochemistry, and other basic neurologic sciences of interest to both Institutes.

The recently appointed chief of neuroanatomy has had a long and distinguished career. Not long ago he discovered a substance which has the remarkable property of producing regeneration of injured nerve tissue in the central nervous system, a process which for decades has been regarded impossible. For the first time, therefore, there is a ray of hope that the spinal cord damaged by injury or disease with resulting paraplegia may be caused to heal and regenerate with restoration of function.

A section in experimental neuropathology will study how diseases of the nervous system develop and how they can be modified by various factors. A young scientist is being appointed to head this section who has made remarkable strides in the comprehension of how a viruslike poliomyelitis attacks an isolated portion of the nervous system and how it produces its well-known clinical effects.

A section on developmental neurology was initiated a year ago under a scientist world famous for his work on the embryology of the nervous system. This section will continue studies in this field of fundamental importance in various congenital abnormalities, such as certain types of cerebral palsy, spina bifida, encephalitis, and malformations of the eye.

A new laboratory in neurochemistry is being established in which there will be a section on lipid metabolism. There is a higher percentage of complex fatlike substance in the nervous system than in most other tissues. One of the most important of these substances is myelin which insulates most of the nerve fibers in the body. Present knowledge of the formation, metabolism, and regeneration of this substance is lacking, yet it is probable that a defect in the formation or regeneration of myelin is responsible for demyelinating diseases which include multiple sclerosis and amyotrophic lateral sclerosis.

EPIDEMIOLOGICAL RESEARCH

Since there is no mandatory reporting system for chronic disease and disability, there are no validated figures on the morbidity of many of the disabling neurologic conditions. The estimates we have are based, in many instances, on spot checks and experience. To meet this deficit the National Institute of Neurological Diseases and Blindness has organized an Epidemiological Section to gather more reliable statistics on the mortality and morbidity of crippling neurological and sensory disorders.

The activities of an epidemiological program, of course, goes beyond the collection of mortality and morbidity reports. Epidemiological research can disclose leads to the cause of disease. For example, the cause of pellagra was uncovered through epidemiological research.

In 1952 and 1953 it was reported that the incidence of amyotrophic lateral sclerosis was greater among the Chamorros on the island of Guam than in the United States and Canada. Amyotrophic lateral sclerosis, more commonly known as Lou Gehrig's disease because the noted baseball player died from this condition, is a serious neurologic disorder which kills its sufferers in about 3 years.

Inasmuch as the original reports from Guam appeared to be reliable, the Institute organized an epidemiological project to survey the incidence and mortality of the disease in Guam, Rota, Saipan, and Moen Island in the Truk Archipelago. The project was set up in collaboration with the Navy Department and the Department of the Interior. The preliminary survey (the first phase of the operation) was undertaken in the summer of 1953 and it was found that amyotrophic lateral sclerosis was 50 times more prevalent on Guam than the reported incidence in the United States. Now, plans for the second phase of the project are in the making, namely: To find out why the disease is so much more prevalent in Guam than in the United States, which may eventually lead us to its cause.

COOPERATION

In every area in which the vistim of the neurological or sensory disorders might benefit, the National Institute of Neurological Diseases and Blindness has actively cooperated with voluntary health agencies, professional societies and foundations, universities, medical schools, and hospitals. The fact that members of the staff as a whole are medical consultants to every major voluntary health agency in the field and are officers in the major professional societies has eliminated useless duplication of research and has contributed to careful definition of research responsibilities on the part of all groups concerned. The National Committee for Research in Neurological Disorders, composed of the voluntary health agencies and national professional societies, consults frequently with staff members of the National Institute of Neurological Diseases and Blindness, and acts as the semiofficial clearinghouse for information on broad aspects of neurological research in the country.

This cooperation is extremely active. In some cases, as in the broad study of retrolental fibroplasia now being conducted, in which the National Society for the Prevention of Blindness and the National Foundation for Eye Research participate along with the Institute, the merging of funds and manpower in planning and execution has permitted the initiation of broad studies which might not otherwise be undertaken and has brought together a wide variety of views and disciplines for the greater benefit of the research attack. The participation of the Institute's research staff in the research problems of local hospitals and the participation of many non-Federal scientists, on either a long- or short-term basis, in the research being conducted at the clinical center, also illustrates that exchange of special views and skills which contributes so successfully to medical investigation.

Until recently many of the neurological disorders were shrouded in mystery and guilt. Families hid afflicted persons. Many victims shunned active social life. These taboos are being broken gradually, with quite concrete positive results. More patients are brought into the open for therapy. The intangible weight of shame and distress on parents is being lifted. Further progress depends on education.

While the Institute is limited in the breadth of its information and educational program, it has cooperated where it can in the production of special materials for the public and the patient. A multiple-sclerosis pamphlet, for example, has been produced in cooperation with the National Multiple Sclerosis Society; another pamphlet is presently in draft on cerebral palsy and its responsibilities are shared with the United Cerebral Palsy Association. In these and other similar projects in the planning stage, such cooperation has been found to be advantageous in that it combines the views of both physician and scientist to the greater clarification for the neurological patient of those facts concerning diagnosis, treatment, rehabilitation, and research which might best help him to adjust to his problems.

It is clear that if a total research attack can be mounted by all agencies, public and private, and maintained at the high degree of close correlation of effort now established, many of the neurological and sensory disorders can be brought under

control. It is not too much to say that such disturbances as epilepsy, muscular dystrophy, and retrolental fibroplasia, which are now so close to resolution, will thereby be eliminated as major public-health problems within another 5 years and at the most 10.

APPENDIX

Research grant—Support of disease categories

	Fiscal 1953 funds		Fiscal 1954 funds	
	Projects	Amount	Projects	Amount
I. NEUROLOGIC DISEASE RESEARCH				
1. Cerebral palsy [1]	37	$296,924	44	$418,756
2. Epilepsy	11	89,959	21	235,162
3. Multiple sclerosis and demyelinating diseases	10	117,438	16	232,920
4. Muscular dystrophy and neuromuscular disorders	11	67,080	20	186,828
5. Other disorders of the nervous system	15	128,864	58	689,791
Total	84	700,265	159	1,763,457
II. SENSORY DISEASE RESEARCH				
1. Ophthalmic	30	251,401	54	392,186
(a) Congenital disorders	4	20,074	4	18,106
(b) Injury	1	1,134	2	10,920
(c) Infections and inflammatory diseases	4	38,095	3	30,188
Uveitis	2	19,357	2	21,835
Keratitis			1	8,293
Nematode infection	1	5,738		
Nonspecific	1	13,000		
(d) Metabolic and degenerative disorders	19	175,741	40	308,774
Cataract	3	17,168	5	38,610
Corneal opacities	3	33,522	2	17,468
Glaucoma	6	47,734	9	100,510
Senile blindness	1	12,000	2	22,284
Retrolental fibroplasia	2	3,250	13	59,279
Retinal detachment	2	32,999	4	29,664
Retinopathy	1	16,999	3	20,898
Fund to metabolic disorders ((n. s. p.)	1	12,069	2	20,061
(e) Neuromuscular disorders: Strabismus	1	6,042	1	1,000
(f) Hysterical amblyopia			1	6,316
(g) Research of public health significance	1	10,315	2	16,882
2. Otologic research	5	60,987	8	72,573
(a) Auditory impairment	4	56,019	6	56,589
(b) Validation of recorded hearing tests	1	4,968	1	7,668
(c) Vertigo (labyrinthine disease)			1	8,316
3. Neurosensory disorders	6	44,709	13	1231,92
(a) Pain	4	25,980	7	66,376
(b) Olfaction	1	10,729	2	18,000
(c) Tactile			1	9,029
(d) Nonspecific (general)	1	8,000	3	29,787
Sensory disease research total	41	357,097	75	587,951
Neurologic disease research total	84	700,265	159	1,763,457
Grand total	125	1,057,362	234	2,351,408

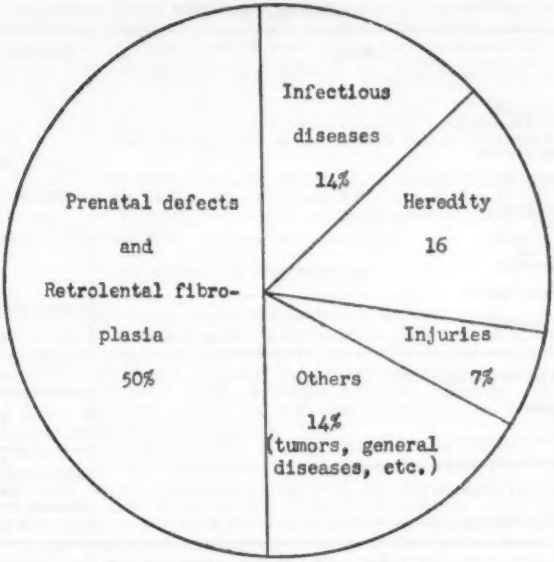
[1] Includes injury and disease to the brain where dysfunction is predominantly motor.

NEUROLOGY AND BLINDNESS ACTIVITIES, PUBLIC HEALTH SERVICE

The following data extracted from Bureau of the Budget submission for fiscal year 1954, Neurology and Blindness Activities, Public Health Service:

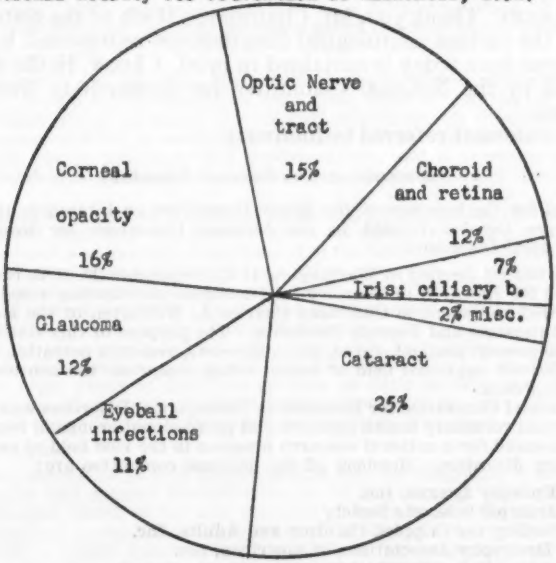
Research grants

Approved backlog from 1952	149,800
Available funds for new projects in 1953	249,900
Balance available for new approved projects in 1953	100,100
Estimated new approved projects in 1953	2,320,000
Balance deducted	100,100
Estimated backlog for 1954	2,219,900
Estimated backlog for 1954	2,219,900
Committed continuations for 1954	1,050,000
New approved projects to be received in 1954	2,320,000
Estimated total needs for applications in 1954	5,589,900
Less estimated withdrawn projects and/or those with deferred starting dates in 1955	1,089,900
Amount requested in budget submission for fiscal 1954	4,500,000



CAUSES OF BLINDNESS IN CHILDREN

(National Society for Prevention of Blindness, 1952)



CAUSES OF BLINDNESS IN ADULTS

(Federal Security Agency Report, 1947)

39087—53—pt. 4——8

1954 appropriation

Activity	Positions	Amount
Grants:		
Research grants		$2,700,000
Research fellowships		150,000
Traning grants		400,000
Training stipends		104,000
Total grants		3,354,000
Direct operations:		
Research:		
Laboratory	50	215,800
Clinical	68	343,600
Supporting		478,600
Total research	118	1,038,000
Review and approval:		
Institute	4	35,800
Central		12,200
Total review and approval	4	48,000
Administration:		
Program	4	40,600
Central		19,400
Total administration	4	60,000
Total direct operations	126	1,146,000
Appropriation		4,500,000

The CHAIRMAN. I looked through this rather hurriedly and it seemed to me it did not, so I want you to feel free to add that to your testimony in as complete a form as you wish.

Dr. BAILEY. Thank you, Mr. Chairman. Much of the material concerning the various neurological disorders not represented by any organizations here today is contained in brief, I know, in the statement prepared by the National Committee for Research in Neurological Disorders.

(The statement referred to follows:)

NEUROLOGICAL AND SENSORY DISORDERS

(Prepared for the hearings of the House Committee on Interstate and Foreign Commerce, October 7, 1953, by the National Committee for Research Into Neurological Disorders)

At their annual meeting in Washington, D. C., September 29, 1953, the National Committee for Research in Neurological Disorders unanimously voted to submit this prepared statement to Chairman Charles A. Wolverton of the House Committe on Interstate and Foreign Commerce. The purpose of this statement is to outline the present medical status, economic costs, research potential, and needs of the relatively neglected field of health which comprises the neurological and sensory disorders.

The National Committee for Research in Neurological Disorders was organized from national voluntary health agencies and professional groups in response to a growing demand for a national research program in the vast field of neurological and sensory disorders. Members of the national committee are:

National Epilepsy League, Inc.
National Multiple Sclerosis Society
National Society for Crippled Children and Adults, Inc.
Muscular Dystrophy Associations of American, Inc.
United Cerebral Palsy Associations
Committee for Public Understanding of Epilepsy
American Academy of Neurology

The primary objectives of the national committee are (1) to survey the current needs in the field of neurological and sensory disorders, with special reference to medical research, training of specialized professional personnel and treatment facilities; (2) to make these needs known to the public, universities, research institutions, and Government agencies; (3) to stimulate research and training to the extent of these studied needs; and (4) to jointly attack national problems in this area of disease where the combined action of the interested societies of this committee would be more efficient than the action of any one of the societies alone.

Accordingly, the National Committee for Research in Neurological Disorders welcomes most sincerely the invitation from the chairman of the House Committee on Interstate and Foreign Commerce to participate in their hearings on health matters of the Nation.

THE NATURE OF THE PROBLEM

Definitions

The concept of neurological and sensory disorders as an entity and as a single major public-health problem is slowly being recognized. While most of the various types of cancer are conceived of as simply "cancer" and the various types of heart disease simply as "heart disease," the various neurological disorders—whether poliomyelitis, cerebral palsy, multiple sclerosis, epilepsy, muscular dystrophy, and many disorders of the eye and ear—seem each to constitute a separate, indivisible problem in themselves.

In fact, this is not so; as the problems of heart diseases are linked to the entire circulatory system, so all neurological and sensory disorders are referable to the nervous system; to the brain, the spinal cord, the nerves and the sensory receptors which provide us with the powers of sight and hearing. Epilepsy and cerebral palsy, for example, simply represent a variety of symptoms occurring as a result of damage to nerve tissue in various areas of the brain. So it is also with a wide variety of eye disorders, for the eye is but an outgrowth of the brain; the optic nerve, for example, is brain tissue, so is the retina, and 5 of the 12 cranial nerves are involved in the function of sight. The neurological and sensory disorders, therefore, from the medical-research point of view, are inextricably linked. This interdependence has been fully symbolized in the establishment of a National Institute of Neurological Diseases and Blindness.

Morbidity and mortality

As a distinct group of disorders, the neurological and sensory diseases create an extremely serious public-health problem. They affect 20 million persons in the United States alone,[1] of whom at least half endure gravely disabling conditions. As a cause of death, it ranks third with cerebral vascular disease, causing 160,000 deaths yearly, achieving that position alone; and it is estimated that another 50,000 deaths yearly are due to all other neurological and sensory disorders.

It is, however, as the primary cause of permanent crippling that the neurological and sensory disorders are known. Cerebral vascular disease, caused by injuries, infections, and vascular disturbances of the brain, while a serious killer, leaves 1,800,000 now alive and crippled, paralyzing the body or seriously limiting the powers of movement, speech, and vision. And the other neurological and sensory disorders, similarly affecting the brain or spinal cord, are responsible for the disablement of another 8,200,000 persons.

This crippling is so severe and extends over such a long period of time as to cause profound psychological, social, and economic dislocation for the individual sufferer. No other group of disorders receives so little medical and research attention; yet no other group of disorders represents such an economic loss to the Nation and the patients and families who must cope with them.

Costs to the Nation

It is almost impossible to gain proper insight into the staggering costs which the neurological and sensory disorders impose on the country. The nature of these disturbances, which in the vast majority of cases render the vital organs useless, are such as to eliminate the neurological patient as a productive member of society and to render him wholly or partially a dependent on family, community, State, and Government. The fact that so many of these conditions have their origin in childhood or early adulthood and that life, nevertheless, so fre-

[1] See appendix A.

quently endures the normal span of years undoubtedly makes these disorders the most tragic personal problems and the source by far of the most tragic drain on the country's resources.

Some concept of our national economic losses may be given by just reviewing a single neurological problem. Statistics derived from the Journal of the American Medical Association indicate that 200,000 persons are absent from full employment every day of every year largely as a result of head injuries caused by industrial and automobile accidents. This represents a loss of 416 million man-hours of work and at an average of $1.50 per hour ($60 weekly), this amounts to wage losses of $624 million a year.

Exclusive of wages lost, however, reliable studies by industry cost accountants have shown that the average accident involves indirect costs which are at least four times as great. Another $600 million must be included for medical expenses and compensation payments, and twice this sum must be reckoned as the cost of time lost by superiors and executives, loss of materials, damage and repairs to tools and equipment, time lost by fellow employees, hearings before compensation boards, and the time of medical personnel. The economic losses due to head injuries in any given year must, therefore, be calculated at very close to $2.5 billion. And the total productive losses for all neurological disorders cannot be less than 10 times this sum.

The 260,000 totally blind, for example, are scarcely productive at all; in addition they cost the county $150 million in welfare expenditures, plus another $36 million in income-tax deductions. A large majority of the 500,000 who incurred cerebral palsy in childhood will also not enjoy fruitful labor, will not pay income taxes, and cannot serve in the Armed Forces. The costs of maintaining just 50,000 epileptics in State institutions amounts to $35 million yearly. And one insurance company has estimated that the cost of indemnity and continuous hospitalization of a single paraplegic patient will amount to $400,000. While we do not know the exact number of paraplegics in the country, the estimates based on professional spot checks, range from 85,000 to 125,000.

In this bewildering array of costs due largely to the crippling effects of the neurological and sensory disorders, the national income as derived by tax revenue is also seriously affected. It has been estimated, for example, that at our present tax rate per capita, the 500,000 cerebral palsied, who incurred the disorder in infancy, should pay at least $600 each year in income taxes, or a total of $300 million yearly. Over half of these, however, will actually pay no taxes at all and over an average adult productive life span of 30 years, a total of $5 billion in tax revenue will be lost from the cerebral palsied. It is quite clear that if all the neurological and sensory disorders could be resolved as public-health problems, so would the problems of the national budget.

Personal costs

To the individual patient and his family, the costs of the neurological and sensory disorders are not calculable in economic terms alone, though certainly these will frequently be tragic. The loss of productivity, as already indicated, where adults are affected over long periods of time, if not permanently, simply means cessation of income and the consequent impoverishment of the entire family.

Where the family income producer is not affected, the costs of medical care, of doctor, nurse, hospital, or custodial homes are still extremely high. Just what their average might be it would be impossible to say; in those disorders which can be controlled in some measure by various drugs, the total costs might run as low as $1,500; but the costs of rehabilitation and care of cerebral-palsied children over a long period of time have frequently run as high as $100,000.

Economic costs and the resultant social and psychological pressures which they cause are ironically enough aggravated by the fact that these disorders, once developed, are incurable and in most cases uncontrollable. But no neurological patient will accept this verdict and the painful history of the multiple sclerotic, for example, or the parents of a muscular-dystrophied child is the record of a pilgrimage from physician to physician (or indeed to any) until personal and family funds are exhausted.

Just as frequently, however, the patient does not receive an immediate diagnosis and before his disturbance is identified for what it is, he has visited various physicians and paid for services not relevant to his condition. It takes an average of 6 years before the multiple sclerotic is diagnosed as such by a qualified specialist; and 9 out of 10 victims of myasthenia gravis, if they live, are misdiagnosed for a similar period. The myasthenic may be treated for neuro-

asthenia, poliomyelitis, muscular dystrophy or atrophy, or even hysteria, and undergo psychological treatment or be placed in a sanitarium.

Dearth of specialists

There is good reason for this situation. The specialists available who are capable of diagnosing or treating the neurological disorders is discouragingly small. Of the more than 190,000 practicing physicians in the country, less than 250 specialize in medical disorders of the nervous system. In some areas of the country, there is only 1 such specialist to over 900,000 persons in the population, and the best ratio sees only 1 per 650,000.

The possibility of immediately enjoying a responsible increase in the number of these specialists seems remote. Of the 79 medical schools in the Nation, only 21 have complete neurological units for the training of personnel in this field; and there are only 151 available positions in the entire country which may properly be called neurological training posts.

The dearth of specialists in the field is not only responsible for inadequate diagnosis but, more important, for inadequate or no treatment at all. Today, for example, where 80 percent of the 1½ million epileptics could receive successful therapy for the control of seizures, only 20 percent or about 300,000 are able to do so. Another 30,000 epileptics receive treatment through medical mail-order houses, a poor means of therapy at best and always a dangerous one.

Of the 1,800,000 victims of the cerebral vascular diseases (stroke), only a fraction receive the rehabilitation services which could train them to some degree of independent self-care or employment. They become the permanent occupants of hospital beds at tremendous cost, or, at home, they become permanent burdens on their families who must feed, dress, wash, and nurse them, and when this becomes intolerable, they are sent to custodial homes. (It is estimated that 25 to 50 percent of the occupants of custodial homes are neurological victims.)

Dearth of facilities

Inadequate facilities for the treatment of the neurological patient is closely correlated with the dearth of specialists in the field. There are just a handful of clinics throughout the United States concerned with these problems from a medical standpoint and those few which do exist are, in the majority of cases, fundamentally associated with one research program or another.

In two areas, most notably in cerebral palsy and blindness, voluntary health agencies, the State and Federal Governments have made extensive funds available for treatment facilities, and indeed more than for all other neurological disorders combined. But even those facilities are far from sufficient. In the State of Connecticut, for example, which is extremely conscious of the problem of cerebral palsy, it is estimated by State authorities in 1951 that of 420 children who needed occupational therapy, only 60 received it; of 580 children needing physical therapy services, only 220 had been served; speech therapy was needed by 260, 70 received it; less than half of those needing extensive treatment given in special hospitals could obtain it; and for every child then in a custodial institution, there was at least 1 more for whom such care was desirable. Another 120 children needed special educational classes; 30 needed a home instruction program and there was considerable need for further vocational guidance services, medical social work, and other premedical support.

The needs set forth by the State of Connecticut do not present the entire picture, sorry as it is. The above statistics were based only on the known cases of cerebral palsy. But for every 10 cases that were known, State authorities acknowledged that 7 were not.

These facts barely adumbrate the situation and no data can present the picture of personal despair which most of these disorders bring with them. More than a third of the 60,000 yearly deaths of new-born children are due to brain injury; and for half of the parents of the 100,000 muscular dystrophied children, the pain of their children's death is even worse; they must watch their children grow paralyzed slowly, knowing that only a few will reach adolescence and almost all will die before maturity.

For those who are crippled and do not die—those suffering, say, from multiple sclerosis, amyotrophic lateral sclerosis, Parkinsonism, myasthenia gravis, hemiplegia, paraplegia, blindness—these, while living, can scarcely be called alive. Incapacited, committed to the isolation of their homes, rooms, or beds, they are far beyond the boundaries of a normal physical, social, and economic life. A burden to themselves, they become also a burden to their families and frequently only the profoundest love can salvage the splintering of the most intimate ties.

THE ATTACK ON THE PROBLEM

The past

It is clear that this situation can be alleviated. There is, however, it should be noted, good reason for the inadequate attack on the neurological and sensory disorders prior to the past few years. Such an attack is almost always contingent on the insistence of public demand that something be done about the problem; but the crippled neurological patient, the epileptic, the cerebral palsied, has always been reluctant to press for aid where this disease for centuries has been synonymous with embarrassment, shame, and hopelessness.

In addition, the fact that the central nervous system has presented science with its most complex problems has not encouraged a vigorous offensive in the laboratory devoted to understanding the growth, structure, and action of the nervous system and to the finding of new methods of prevention, diagnosis, and cure of the neurological and sensory disorders. It should be noted here that the human brain alone is composed of some 20 billion nerve cells and while each of these may seem more or less alike, each serves a special function, each contributing in some singular manner to all our movements, actions, thinking, smelling, hearing, and breathing. How they do so constitutes one of the major medical challenges of our time and one to which we have just begun to devote ourselves.

The present

That both the medical and medical research attack on the neurological disorders is gaining strength there can be no doubt. The past decade has seen a stirring of public and professional interest in this field, and the establishment of the various voluntary health agencies, the development and growth of various professional groups, and finally the creation of the National Institute of Neurological Diseases and Blindness by act of Congress in 1950 is testimony to the recognition of the neurological and sensory disorders as a major public health problem. No social or economic history written from this time on can fail to see that the 1940's and 1950's were the beginning of a new medical era.

The attack on the problem so far as largely been directed to immediately meeting the medical and welfare needs of the victims of the neurological and sensory disturbances wherever possible. In no category among these disturbances has this been entirely successful, and it is obvious that certain measures, such as the establishment of diagnostic, treatment, rehabilitation, and educational centers in key geographical areas throughout the United States must be expedited.

Steps to meet all the possible needs which exist, however, are clearly impossible. The financial drain on the country militates against such a solution, mainly because treatment of these disorders is never ultimate; in no case do they restore the human being to his normal status or to a normal state of productivity. The services of a full medical program is contingent upon the success of the therapies which can be brought to bear against disease; and in the neurological and sensory disorders, these therapies have yet to be fully realized.

Research accomplishments

Nevertheless, extremely significant medical advances have been made in the partial control of certain neurological and sensory disorders, and these are all the more noteworthy for having been achieved under minimum financial support. At the present time, 80 percent of all epileptic seizures can be controlled by a variety of new drugs and new surgical procedures; new drugs have also been found to alleviate the muscular weakness of myasthenia gravis and partially control the symptoms of Parkinsonism. The development of total rehabilitation procedures has helped restore the cerebral palsied and other victims of brain and spinal injury to some degree of independent self-care. And the electroencephalograph, the electromyograph, and air encephalography procedures have not only revolutionized our ability to diagnose such disorders as epilepsy, brain tumor, and other neurological conditions, but has provided an invaluable research armamentarium for studying the activity of the brain.

In ophthalmology, ACTH and cortisone have been responsible for preventing blindness from a variety of disturbances; new surgical procedures cataract and glaucoma, have helped retard the insidious progress of these conditions; and the development of corneal transplant methods has been able to restore sight in some cases which would have been irrevocably lost.

We may congratulate ourselves on these advances, and they must especially command respect in view of the limited facilities at the disposal of the scientists responsible for their achievement. In 1951, for example, of the $33 million

which was devoted to all medical research grants, as recorded by the National Research Council, less than 3 million was allocated by all agencies, public and private, for investigation of the neurological and sensory disturbances. Less than $900,000 was spent on research into blindness, in contrast to the $150 million spent for care and services to those already blind.

Research ahead

In the full perspective of the problems facing us, those achievements already made will represent only a small fraction of those which we must cover. Such disorders as cerebral palsy, muscular dystrophy, multiple sclerosis, paraplegia, and hemiplegia are still incurable. And even though therapies have been developed for Parkinsonism, myasthenia gravis, and epilepsy, these suffer from severe limitations. The drugs for the treatment of myasthenia gravis, for example, may cause serious side effects, may require frequent administration (usually every 2 hours) and eventually their ability to control the terrible muscular weakness which characterizes may fail. While agents for the treatment of epilepsy are relatively more successful, only a cure which can guarantee the complete disappearance of the disorder will dissipate the social and economic prejudices which are the peculiar fate of the epileptic. For even those whose seizures are controlled (they may suffer but one seizure a year), once they are identified as epileptics, they become virtually unemployable, in many States they may not yet married nor may they have children. The child who is an epileptic may not be admitted to his community's schools, in spite of the fact that his intelligence will be normal or even above it. The social fate of the epileptic—and indeed the cerebral palsied, the muscular dystrophied, and the blind—is often that of the outcast and patronizing acceptance drives them even further into their private worlds. In passing, it should be said that education of the public in the understanding of these disorders must be carried far beyond present efforts.

The major research achievements in the neurological and sensory disorders, therefore, lie in the future. With a broad research attack, considering previous scientific successes, there is no reason to believe that they will not come. Such research, even under present weak financial support, shows the sure signs of progress, and the vast complexities of the nervous system are being unraveled. Among the more basic laboratory developments has been our increased ability to define both the microscopic and enzymatic structure of nervous tissue, an ability to measure the cerebral circulation of the brain; the development of the oxygen electrode has permitted the quantitative measurement of oxygen tension at microscopic points in the brain and through new microchemical techniques and the development of the microelectrode, the metabolism, and electrical activity of single nerve cells are rendered susceptible to experimental determination.

These basic studies on the nervous system are intricately related to those disorders of the nervous system with which the public is concerned. While the value of this research may be disguised until the fruitful moment of application has arrived, it may not be too difficult to see where such investigations frequently form the basis of the ultimate benefit of treatment or cure. For example, this year one scientist has formed a method for growing nerve cells outside of the body so they will conduct electrical impulses. At this stage of neurological invesigation, this finding provides a highly useful method for studying nerve tissue and nerve impulse. Visionary as it seems and indeed it may be, it also clearly signals another possibility that damaged nerve tissue may be replaced or regenerated.

Damage to nerve tissue

Damage to nerve tissue is one of the central issues in the consideration of our possible success in attacking the neurological and sensory disorders. In the majority of these disturbances, nerve tissue on the brain or spinal cord has been or is in the process of being destroyed. Such destruction makes it impossible for nerve impulses to pass from the areas affected to those muscular junctions which they ordinarily activate, and the consequence is partial or total disfunction or paralysis. If more damage, therefore, can be prevented, or again, if this damage can be reversed, then a large number of neurological problems will be resolved.

The work in prevention has already made partial progress. Research evidence has clearly established the effects of contingencies occurring during pregnancy and labor on the development of brain injury in the new-born child, and these facts have already been absorbed into medical practice. We do not X-ray a pregnant woman around the third month, unless absolutely necessary, for example, and we are especially careful in keeping the prospective mother out of

contact with certain infectious diseases, especially German measles. And to further prevent brain damage to the child, our obstetrical procedures have become more and more refined.

Valuable as these measures are and will increasingly become, it is clear that only a fraction of all the deaths occurring as a result of natal and postnatal brain and spinal injury can be prevented. Damage done prior to birth, for example, is irrevocable; let the brain be deprived of the nourishment of oxygen for just 3 minutes during the 9 months of gestation and the precious cells of the brain's cortex have begun to deteriorate and the patient is rendered a permanent cripple.

Regeneration of nerve tissue

The main hope of research, therefore, lies in somehow reversing nerve damage already committed. While it is classical theory that nerve tissue cannot be regenerated, yet there is good evidence recently that such is probably not the case. An investigator now at the National Institute of Neurological Diseases and Blindness, who was working on another problem entirely a few years ago, came up with a finding which may lay the groundwork for an absolute rebuttal of this belief.

These investigators injected some cats, whose spinal cords had been severed, with a certain type of dead, heat-producing bacterial agent. On autopsy, these investigators found to their amazement that nerve fibers had grown across the severed spinal cord and that they were capable of carrying nerve impulses. These were later to determine that the substance which had been injected had prevented the formation of scar tissue at the place of damage and this scar tissue ordinarily created a dense barrier through which the nerve ends could not grow together.

While later investigations showed that this bacterial agent could only restore minimum movement to the injured cat, and that it was most effective only if administered rather shortly after the spinal cord was cut, one factor of overwhelming importance emerges—there is good probability that nerve tissue can be regenerated and the medical texts will have to be revised to this effect.

This is not to say that its achievement in terms of a successful therapy for the neurological disorders lies within the near future. It is, of course, possible that some already known agent, other than those presently being tested, will prove more effective on humans, but it seems likely that the successful treatment will develop out of our ultimate understanding concerning the growth of nerve cells and the biochemistry and metabolism of nerve tissue.

Broadening of the research effort

The research effort which should be devoted to these and other promising lives of investigation is, however, at a minimum. Many areas of research, moreover, must be opened up to investigation which have never been brought under attack before. In the many links of fact which constitute our understanding of the functions of the nervous system there are now many gaps to be filled. Important as cerebral vascular disease is to the Nation, the Public Health Service, which supports about one-third of all medical research, is devoting approximately $110,000 to support of investigations in this field. The Multiple Sclerosis Society alone, for example, lists 28 major problems which should be followed up or initiated, each of which should be the object of several different studies.

In many areas, even exploration of the obvious has been neglected and useful results have been postponed indefinitely. There is good reason to believe, for example, that cataracts may occur as a result of changes in the composition of the eye due partially or wholly to the growth and aging process. We have believed this for some time, but in spite of this fact no specific investigation of this problem has yet been initiated—though it is now being planned at the National Institute of Neurological Diseases and Blindness.

Such research, of course, is expensive; and it may be a number of years before we can see concrete results. Numerous laboratory animals at every stage of growth must be examined and analysis of protein changes in the lens, its water content, weight, specific gravity, and other factors must be checked, and finally if such changes do indicate that cataract in animals is due to aberrations of the normal growth process, the changes which occur in humans must be studied with the same care.

While the costs of such research are high, the costs of not performing it are a good deal higher. Approximately 20 percent of all blindness is due to cataract—50,000 of the totally blind, 200,000 of those blind in 1 eye, and 68,000 of those

whose vision is barely useful—all these are victims of this condition. Unless the genesis of this disorder is established, those who will inevitably suffer it in the future will also have to fumble in the permanent dark.

Research manpower

The problem of expanded research in the neurological and sensory disorders is, of course, contingent on the manpower available to conduct such investigations. At the present time, only in certain areas of laboratory research has a shortage in scientific personnel so far made itself felt. This is particularly so in the field of ophthalmic disease where, for example, there is an acute shortage of investigators capable of studying of studying the major biochemical processes of the eye which might lead to successful therapy of the ophthalmic disorders.

The dearth of trained neurologists, however, poses a special problem. In almost every major field of medicine, a large number of practicing physicians devote a portion of their time to research investigations. It is to these clinicians that the public must look for the development of research findings in the laboratory and in their application to human illness. Without them, the work of the laboratory scientist in the scientific journals gathers dust on the library shelves. The shortage of medical specialists in neurological and sensory disorders, therefore, represents a shortage of clinical research manpower and a consequent delay in the development of new therapies.

The problems of research manpower as a whole in this field threatens to become a major one in the event that research support is forthcoming on the scale appropriate to the Nation's needs. At the present time, funds available for the training of investigators in this field are sufficient for replacement of investigators who leave or retire from the field.

THE FUTURE OF THE PROBLEM

There is no reason to believe that the neurological and sensory disorders must remain a burden to the Nation. The organizations for handling these problems now exists and it only remains for them to receive sound financial support.

The past decade has seen the growth of the voluntary health agencies, devoting themselves largely to providing health and welfare facilities to special groups of patients and to some extent to the support of research. Many patients suffering from various neurological disturbances, of course, have no central private agencies representing their needs and even only a minority of those so served can receive the services which they need.

It is clear that these services must be expanded broadly. The ability of the voluntary health agencies to do so has and does now depend on the degree of interest they can stimulate on the public and the amount of support which can be obtained thereby. It seems unlikely, however, that the vast job which must be performed can be achieved through these sources alone.

In certain areas, most notably in blindness and for certain groups of crippled children and adults State aid has been considerable; and the Federal Government, through the Office of Vocational Rehabilitation and Children's Bureau, has been able to supplement these State funds for a limited number of purposes. It is to be hoped that funds in these areas can be expanded and that broader categories of support may be established to cover most of the neurological and sensory disorders and more services within each disorder already covered. It should be noted that the voluntary health agencies in the field work closely with State and Federal agencies to make health, educational, and welfare facilities and funds available to those who need them most and/or where they will be most productive.

While these services must be expanded far beyond their present status, it is clear that absolute emphasis on medical and paramedical aid would be misplaced; the costs to the Nation, if they were to achieve anything like the ideal goals needed, would be beyond our capacities. In addition these services in this field, as in no other, represent a distinct compromise; they can never fulfill the ultimate needs of the patient. The cerebral-palsied child, for example, who has been rehabilitated is still a cripple; the blind who have learned to walk with dog or read by braille are still living in the dark. This is not to imply that such services are not necessary; without them, hundreds of thousands are now suffering isolation and destitution.

This is to say, however, that research devoted to the prevention and cure of these disorders must have a high priority. Within the past 2 or 3 years there has been more active recognition of this fact by voluntary health groups and the professional persons or groups associated with them, and more funds have been

devoted to research than ever before. But the burden of maintaining adequate health services and facilities, plus the tremendous research needs in the field, makes the total support of research by private sources an obvious impossibility. The National Committee for Research in Neurological Disorders, in addition to stimulating research, has as one of its main functions the problem of establishing a clearinghouse for research in this field so as to avoid useless duplications of research support and to some extent establish broad areas of research priority which might prove especially fruitful for the conquest of a number of disorders.

The National Institute of Neurological Diseases and Blindness

The greatest stimulation to research in this field, as in others, however, has come from the Federal Government, and it is to Washington that we have looked finally for that implementation of the neurological research effort which will supplement on a broad scale the efforts of the voluntary health agencies and individuals working under university or institutional auspices. While it is clear that the Federal Government must bear a large part of the burden of support of research in this field, it should not be wholly in their hands. There are many authoritative differences of opinion of the kinds of research to be undertaken concerning any given problem, and which approach is most valid can only be tested by actual experiment. Diversity of support, therefore, guarantees that many different opinions will prevail and that the research attack will be various enough to increase the chances for success.

With the establishment of the National Institute of Neurological Diseases and Blindness in the autumn of 1950, largely as a result of public demand, it seemed probable that the future of neurological research in the United States was assured. In view of the past appropriation histories of the other major national institutes of health, it was hoped that Congress would respond as generously again to the needs of a large body of the American people. This however, has not been the case and, while the Institute has already made considerable contribution to the research needs of the field, it is far from filling the enormous vacuum which has existed for so long.

The machinery for fulfilling these needs at the Institute has already been set in motion, but it grinds exceedingly slow. Its research grants and research fellowship program, patterned on the successful examples of the other national institutes of health, could very well speed the attack on the neurological and sensory disorders and strengthen and renew our sources of scientific manpower. The record of the Institute shows, however, that it has been able to support less than half of the qualified research projects presented to it and far fewer of the qualified research applications. A preliminary survey by this committee, attempting to ascertain the research potential in this field, indicates that if it were not for the reluctance of universities and medical schools to apply for aid, where aid, they know, cannot be forthcoming, the relative degree of Institute support would be far less than it is. This survey reveals a need for Institute research funds alone in the amount of $18 million.

Intramural program at Clinical Center

The Institute's intramural-research program at the Clinical Center in Bethesda should be given special and additional support. Here we have the opportunity of launching the first full-scale coordinated research program in the world against neurological and sensory disorders. Here we have for the first time the opportunity to investigate these disorders with the latest precision tools and to integrate the data they yield with our rapidly increasing knowledge in the basic biological sciences. But even more, if this program is properly supported, we now are in a position to make a frontal attack on the intricacies of the nervous system and the importance of their functions to health and disease.

We have mentioned the complexity of the nervous system with its important sensory endings. We have mentioned its diffuse and wide ramifications and arborizations throughout the entire body from its highest control tower, the brain, to its simplest reflex structures which mediate the vital functions of respiration and circulation. To explore through this vast and complex domain of bodily function and discover causal explanations for the major neurological and sensory disorders requires the application of newer technics from many disciplines in the clinical and basic sciences. And it is in such a collaborative effort the Institute's intramural program, if more fully supported, should bring to fruition the practical therapeutic applications to the millions of sufferers more rapidly and more completely than if the task were undertaken by numerous isolated projects.

A definite termination for the public health problem represented by the neurological and sensory disorders cannot, of course, be predicted. The growth of

interest on the part of the public and the Statae and Federal Governments has been encouraging and has resulted in extraordinary growth within a very few years. There is considerable evidence, however, that even as we move forward, the problems are even larger than we supposed and that we will not resolve them within the near future unless far stronger effort and support is available. This committee cannot urge the Congress too strongly to reconsider the nature of the problem and to join the private and professional agencies we represent in an all-out attack on the neurological and sensory disorders.

APPENDIX A.—*Incidence of major*[1] *crippling chronic neurological and sensory disorders*

		Cases
Cerebral vascular disease		1,800,000
Epilepsy		1,500,000
Cerebral palsy		500,000
Hemiplegia		1,500,000
Paraplegia		100,000
Parkinsonism		1,500,000
Aphasia		400,000
Multiple sclerosis and other demyelinating diseases		300,000
Muscular dystrophy		100,000
Blindness		1,700,000
Totally blind	260,000	
Blind in 1 eye	1,000,000	
Vision barely useful	340,000	
19.5 percent of total affected by cataracts		
15.2 percent of total affected by keratitis		
10.5 percent of total affected by glaucoma		
Deafness (760,000 totally deaf)		4,560,000
Cronic meningitis		15,000
Chronic encephalitis		100,000
Chronic poliomyelitis		225,000
Neurosyphilis		120,000
Brain, spinal, and peripheral nerve tumors		10,000
Myasthenia gravis		30,000
Accident and injury to the nervous system		1,000,000

(Exactly how serious this problem is we do not know, but some idea of its extent may be realized when we consider that during World War II there were about 25,000 penetrating wounds of the head (a much greater, though unknown, number of closed head injuries), and 230,000 peripheral nerve injuries. Again, more than 200,000 persons yearly suffer skull fractures in auto accidents; and approximately 10 percent of all civilian accidents result in injuries to the nervous system.)

[1] What may be termed "minor" neurological disorders, such as neuralgia, neuritis, radiculitis, Bell's palsy, herpes zoster, migraine, and other forms of chronic headache, are, in fact, extremely serious, though their residual effects are not as debilitating as the disorders listed above. The minor disturbances are extremely common and painful, and present special problems in terms of their productive and economic loss to sufferers and to the Nation. Chronic headache, for example, affects 12 to 15 million persons in the United States, and is more responsible for employment absences than any other single medical problem, with the possible exception of the common cold.

Mr. HESELTON. Mr. Chairman?

The CHAIRMAN. Mr. Heselton.

Mr. HESELTON. Does the Institute report directly to Congress?

Dr. BAILEY. We report through the Department. However, the appropriations are line items for each institute.

Mr. HESELTON. What is the date of the last report, and what period does it cover?

Dr. BAILEY. It would be 1952–53.

Dr. TRAEGER. Dr. Bailey, is there any importance in epidemiology in the field of these neurological diseases? Can you tell us anything about that?

Dr. BAILEY. Yes; very much so. I think it is a good example where, for instance, the National Institute can properly attack a major

problem. For instance, crippling diseases, chronic diseases are not reportable. It is not mandatory. So it is very difficult to get an estimate of the morbidity and mortality of these diseases.

Epidemiological studies, particularly in the field where there are so many diseases in which the causes are unknown, are very important to get a lead on what causes the disease.

You gentlemen may know that the cause of pellagra, for example, was discovered by an epidemiological study. We are just beginning this work.

We have already completed one epidemiological study on multiple sclerosis which indicated that the incidence of multiple sclerosis is higher in the North than it is in the South in the United States. The second project, just initiated, was stimulated by a report from Guam that among the Chamorro population there the incidence of amyotrophic lateral sclerosis, which is sometimes called Lou Gehrig's disease because it is the condition which killed the famous baseball player—a famous disease which kills in about 3 years—was much higher in Guam than in the United States.

In collaboration with the Navy Department and the Department of Interior, in order to get cooperation from the local government in Guam, we set out to see if this were true and, if it were true, would it lead us to anything which might give us a cause for this disease.

Well, in the preliminary survey which was undertaken this summer in 2 months—and I think you will admit that is quite fast—the investigation was taken through Guam, Saipan, and the neighboring islands, and in Guam we found that the incidence of the disease was 50 times higher than in the United States. Now, why? That is the second phase of the project.

That is the phase of the project we hope may give us some lead as to what caused this very torturing and killing disease.

Does that answer your question?

Dr. TRAEGER. Thank you, sir.

The CHAIRMAN. Mr. Dolliver.

Mr. DOLLIVER. You referred to Parkinson's disease, shaking paralysis. Is that the right name for it?

Dr. BAILEY. No. That is another one. This last one has the worst name of all. It is amyotrophic lateral sclerosis.

Mr. DOLLIVER. I am referring now back to Parkinson's disease. Is that shaking paraylsis?

Mr. BAILEY. That is correct. It is the same thing.

Mr. DOLLIVER. Is there any known treatment or cure for that?

Dr. BAILEY. No; there is not.

Mr. DOLLIVER. Thank you.

The CHAIRMAN. What brings it on?

Dr. BAILEY. There are supposed to be three types. One type follows an acute encephalitis; that is, brain fever. Another type is associated with arteriosclerosis. Another type, known as the idiopathic type, we do not know the cause of.

The CHAIRMAN. How long does it last?

Dr. BAILEY. It is a progressive disease. It may last anywhere from 5 to 35 years.

Dr. TRAEGER. Without mental impairment.

Dr. BAILEY. There is often no mental impairment but there is progressive motor impairment. They develop tremors, bizarre move-

ments, grotesque movements, and they become ashamed of exhibiting themselves; and it is a very pathetic situation.

Mr. PRIEST. Mr. Chairman?

The CHAIRMAN. Mr. Priest.

Mr. PRIEST. Mr. Chairman, I want to ask one question before the neurological panel is finished for the day, and I do not want to ask it for the purpose of opening up an entirely new subject for discussion and prolonging the hearing.

I wonder, Dr. Bailey, if there is much research in the field of what we might call the psychosomatic relationship in neurological diseases.

Dr. BAILEY. Yes, there is a very large need. Frequently you have two reasons. A neurological patient is apt to get a reaction to his disability, a psychological reaction, because he has a socially unacceptable symptom. This is particularly marked in epilepsy.

In addition to that, if any large area of the brain is involved he might have to function on a lower intellectual level than he did before, which creates an emotional problem and has to be treated as such.

Mr. PRIEST. Doctor, if you will pardon me for referring to this, which is very recent and personal, I just want to see if it has any relationship, because it started me to wondering whether or not there might be some psychosomatic research necessary in connection with these diseases.

About 18 years ago I was involved in an automobile accident. It was not too serious, but it tore up some tendons in my back and damaged some nerves. I was told in the diagnosis at the time that some nerves there were damaged. Consequently, for a period of over a year I did not have much feeling in the index finger of my left hand. It was pretty dead to any sort of sensation.

That passed away, however, and I had not noticed it for 18 years until 3 weeks ago, when I was driving on Sunday afternoon. I stopped behind a bus, and the man behind me could not stop as well as I did, and his car crashed into the back of my car, damaging his car somewhat. But momentarily I had the same sort of emotional reaction that I had 18 years ago when I had to turn my car over to keep from hurting some other people in a bad accident. That was just for a flash that I had the same feeling. That scene came back to me.

That night, Doctor, that finger had the same feeling, and even today, though it is passing away, and for the last 3 weeks, that finger has had that same feeling.

I realize that is getting off into a field of which I am greatly interested, frankly, personally, and have been for a long time; but I thought that there might be some relationship in that sort of a situation, neurologically speaking.

Dr. BAILEY. Yes, there might be, but we do not know whether you were hurt in the second operation or where.

Mr. PRIEST. I was not hurt at all in the second operation. It did not jar my car very much, but it was purely an emotional reaction. It did not hurt me at all.

I had 5 other people in the car, and nobody was even injured in either car, but I assume, at least, it was that same emotional reaction that I had 18 years ago which caused that finger to react that way.

I wanted to go further with it. I am going to do a little research myself on it when I have a little more time.

Dr. BAILEY. The Germans have a word, "augenblickdiagnostic," which means a highbrow diagnosis. Using that as a point of departure I would agree with you, sir.

The CHAIRMAN. Off the record.

(Discussion off the record.)

Dr. TRAEGER. Mr. Chairman, I am really embarrassed about the length of time these hearings have taken, and I would like to crave your indulgence to see if Dr. Harry Sands can present for the record a statement dealing with the problem of employment of epileptics. We will not take your time now, but I would like to be sure that his statement will be a part of the record.

The CHAIRMAN. Certainly it will. We have some few minutes if you wish.

Dr. TRAEGER. Very well. Dr. Sands, will you take 2 minutes, please?

STATEMENT OF DR. HARRY SANDS, EXECUTIVE DIRECTOR, EPILEPSY ASSOCIATION OF NEW YORK

Dr. SANDS. We have heard a rather revealing fact this morning. Many of us did not pay much attention to it. That was that 80 percent of the persons with epilepsy can have their attacks controlled right now, if they get good medication.

We ought to see another side of the problem that we have not spent too much time on, and that is the problem of the rehabilitation of persons who have some facilities right now. Perhaps we have talked about the research problem in a vacuum. We have not tied it up with the partnership that goes along with the kinds of things that the private agencies can do, and also the problems of rehabilitation.

Right now, even when we control a person's seizures completely and he does not have any attack because he is on good medication, this person cannot get a job if it is revealed that he has epilepsy.

In 18 States in this country we find that they are not permitted to marry. In fact, in the State of Indiana, a woman who marries an epileptic can get a sentence of imprisonment of not less than 2 years and not more than 21 years. In the State of New Jersey a similar situation exists, in the sense that no marriage license shall be issued when either contracting party has epilepsy.

Even though epilepsy is not a hereditary disease and it is not contagious, you cannot now enter the United States and get treatment for epilepsy. You are barred at Ellis Island or at any port of entry. In short, if you are to try to seek care in this country for epilepsy, though it is not a contagious disease, you are not permitted to enter, or you are at least held up.

We cannot go into a full discussion of this social and economic aspect of epilepsy at this late hour, but we can indicate that if we are going to permit persons with epilepsy to be employed—and they should be employed; there is not any reason at all they should not be employed—we have to reenfranchise them. It is impossible to say to a person with epilepsy now, "Your attacks are controlled. You are perfectly normal, like anybody else in the population. You are a bright person. There is not any reason why you should not indulge in everything else that everyone else indulges in," and then have the kinds of obstacles placed in his way that are placed there, so that he cannot make a good employee.

Insurance companies are reluctant to insure an epileptic, though there is very little data to suggest that a person with epilepsy is accident-prone. At the Ford Motor Car Co., where they have employed a good number of epileptics, they have not had a single compensation case. Yet epileptics find they must keep epilepsy a hush-hush disease. If they do not do that they are not permitted into employment.

There was an incident in Washington the other day, where a local physician called me, who was quite upset because a person with epilepsy had a psychomotor attack on the streets of Washington as he was crossing the street with his fiance, and his fiance called the local policeman and asked him to help this person back on the sidewalk; and the policeman proceeded to lock him up because he had been crossing against a red light, even though he had picked out of his wallet a slip saying he was an epileptic. The result was that one of the local doctors had to go down to court and bring him out.

We can multiply these experiences across the country. We are not dealing with just a neurological entity, but a social entity and an economic entity as well.

What we have to do, it seems to me, is to have a partnership, where basic research must be carried on, but public education, too, must be carried on, as well as rehabilitation, so that we can make use of the abilities and capacities of these people as they exist right now. You just cannot tell an individual to wait until something comes out of the laboratory. I think we all must recognize not only the importance of research but the importance of rehabilitation as well.

Thank you.

The CHAIRMAN. We thank you, and we would like for you to add what you wish to your statement, to be made a part of the record.

(The information is as follows:)

STATEMENT BY THE EPILEPSY ASSOCIATION OF NEW YORK, HARRY SANDS, PH. D., EXECUTIVE DIRECTOR

The National Committee for Research Into Neurological Disorders reports 1½ million Americans with epilepsy. But this statement by the Epilepsy Association of New York will deal primarily with the many millions more Americans who do not have epilepsy. For it is the neighbor, teacher, employer, fellow employee, and other member of the community who is at the core of "suffering" associated with the epileptic.

Medically, 80 percent of those subject to epileptic seizures can be controlled. This is a fact; no longer a goal. However, epileptics as well as those of us who work on their behalf are often inclined to ask, "Does control solve the problem?"

We know enough about people with epilepsy to be able to state unequivocally that in other respects they are normal. As school children they are intelligent as others. As employees they are equally productive, at least, as their fellow workers. As people they are inclined to enjoy entertainment, social life, hobbies, and other diversionary pursuits—just like everybody else.

But from earliest childhood they are forced, by circumstances beyond their ability to affect, to live under a stigma. This stigma, a completely alien way of thought for free Americans, is reminiscent of the Dark Ages, witchcraft, and totalitarianism. Because of the stigma people with epilepsy are forced into hiding. Many—and who can blame them—resort to any subterfuge to keep from being discovered. What are the consequences of discovery?

For small children being known as an epileptic means being left out of children's games. In many States it means being left out of school, or being obliged to seek private instruction. Bear in mind this refers to the epileptic child whose seizures are under control and who is medically, for all intents and purposes, normal.

Let us follow this child into adult life. First of all imagine the psychological impact of his forced isolation and his continuous feeling of being left out. Imag-

ine the case of most young people with epilepsy who have had to come out into the world with substandard educations because they were needlessly left out of school. With this background think about the controlled epileptic who seeks marriage, a family, and of course a job to support these objectives.

Seventeen States in our country forbid persons with epilepsy to marry. The penalties for disobedience of these inhuman laws are excessive fines and/or imprisonment. Until recently many more than 17 States pursued this course. Another State does not forbid the marriage of epileptics. It simply insists, again under penalty, that the person with epilepsy who enters into marriage subject himself or herself to sterilization. This is in spite of the fact that leading medical authorities hold that epilepsy is no more hereditary than other prominent disorders such as tuberculosis, diabetes, and others.

Epileptics are forbidden to immigrate into the United States. They are even detained at Ellis Island and other ports of entry when they have come to this country, leading Nation in the world for the treatment of neurological disorders, only to receive treatment. It is common knowledge that epilepsy is not contagious.

Nor is the United States the only country which bars epileptics. An American citizen with epilepsy is forbidden to enter Canada and other nations for treatment or for other purposes.

Perhaps the greatest source of frustration for the person afflicted with epilepsy is his inability to get a job or to hold a job when his condition becomes known. Employers and coworkers are among those with the greatest misconceptions on the subject. Let us attempt to set the record straight: The safety director of the Ford Motor Co., one of the few large companies which knowingly employ persons with epilepsy, has reported, "Accidents are so low among the epileptics that it would not convey any data worth looking at." Many employers, moreover, do not know that workmen's compensation insurance policies do not penalize employers for hiring handicapped workers, including workers with epilepsy. Workmen's compensation insurance policies are not rated by reason of the employment of epileptics. This is on the authority of the National Association of Casualty and Surety Companies One fact emerges as crystal clear. Epileptics can work, not only for their own benefit but also for the benefit of the Nation.

The Federal and State rehabilitation and employment agencies, as well as private health organizations, would enrich our Nation by increasing their services on behalf of epileptics. For every dollar spent in this useful and humanitarian effort, more than $10—much more—in taxes can be returned to the well-worn pocket of American taxpayers. It is simply good business sense to convert idle people into productive workers. As wage earners, these people are willing and able to share the tax burden, instead of to partake of it.

Clearly the social and economic problem presented by epilepsy is vast. Its unraveling will take the combined resources and efforts of government and voluntary agencies. The Epilepsy Association of New York welcomes the assistance of all individuals and groups who can be coaxed, cajoled, or in any other way persuaded to join the fight. We salute the good start that has been made by the Office of Vocational Rehabilitation and the Institute of Neurological Diseases and Blindness, both divisions of the Federal Department of Health, Education, and Welfare.

The CHAIRMAN. There has been reference made throughout to basic studies in chemistry and the biosciences. I want to make it known for the record that this committee has consistently supported the work of the National Science Foundation, whose function is the support, as you know, of the basic sciences.

Are there any other witnesses, Doctor?

Dr. TRAEGER. No; there are no other witnesses. Dr. Bailey, do you have any suggestions?

Dr. BAILEY. No.

The CHAIRMAN. Has everyone here today had an opportunity to be heard?

Dr. TRAEGER. Yes, sir. I just have one closing sentence I would like to give, and I hope you do not think it is facetious.

The CHAIRMAN. You may proceed.

Dr. TRAEGER. I have been reading the newspapers about these hearings and the magic number appears to be 10 years to discover the cure of some of the disease categories which have appeared before you. I have no such magic number for neurology. In my opinion such prognostications are "crystal ball" guesses.

This much I can prognosticate: Given adequate financial support, we in the neurological field will come up with the answers just as fast as the boys in the rest of the fields.

Thank you for your attention.

The CHAIRMAN. Well, I could not permit you to make a statement of that kind and let it go by without some comment.

The gentlemen who have appeared here before us and who have seen fit at different times to make some prophecy as to the future were of such a caliber and of such a standing that when they expressed opinions, based in some instances upon practically their life's work and their knowledge of what has been accomplished and what it can lead to, who have seen fit to make such statements as you have referred to, I would be inclined to give them some credence. I have too much respect for those who did that and who made the prophecies.

Is there anything further?

May I express to this group and to you, Dr. Traeger, our thanks and appreciation for your appearance here today and the assistance you have given us. You have given a very fine leadership to this group, and the group has responded as we would anticipate they would, being men with the experience they have gained. We feel that you have added very considerably to the work of this committee in the assistance you have given, and we feel deeply appreciative of the fact that you have taken time out of your busy lives to come here and make known to the committee this information which you have brought to us.

We thank you for what you have contributed, and we appreciate the sincerity with which it has been offered to us.

Dr. TRAEGER. Thank you very much, sir.

The CHAIRMAN. Now, while these folks are leaving us, will the individuals who are here on the subject of blindness—Dr. Johnson and the others who are with him—take their places at the witness tables.

(Thereupon, a short recess was taken, after which the following proceedings were had.)

The CHAIRMAN. The committee will come to order, please.

This morning we listened to testimony on the neurological disorders. There was some consideration then of the neurological and sensory disorders as a whole because research on these disorders is closely related, but the specific problems of blindness have yet to be brought under discussion and we are going to take them up this afternoon.

In spite of the fact that there are 260,000 totally blind in this country and 60 more are deprived of their sight each day, our view of this situation is somewhat different than our view of other major medical problems. This is not to say we are not aware of the prevalence of blindness in the United States, but that loss of sight seems to carry with it such connotations of hopelessness and inevitability, that we tend not to think of the possibility of its elimination as we do, say, with cancer, heart, and the neurological diseases.

Nevertheless, blindness is caused by many diseases—cataract, glaucoma, and retrolental fibroplasia among them—and disease, we know, is eventually either preventable or treatable. To what degree, then, we are taking and can take steps in the prevention or treatment of the blinding eye disorders, either through research or other means, is a matter of keen interest to this committee.

We are also deeply concerned with what happens to those who have already lost their sight. We know, of course, of the great work which many agencies, public and private, including those represented here today, have done to help the blind help themselves. We should like to know more about this work and what further work must be envisaged for the future.

It seems clear to me that the country must make every effort to aid those whose vision is totally or almost totally impaired to achieve or maintain their dignity and independence. The personal and economic costs of this effort to individual and Nation, however, I should guess are very high, and everyone must look forward to their diminution or virtual elimination. To what degree and when this may be achieved, is, therefore, also a matter of concern and I hope our witnesses will be able to cast further light on this matter.

We will have inserted in the record at this point the prepared agenda and the list of participants in these hearings.

(The material follows:)

OPHTHALMIC DISORDERS—AGENDA

1. Purpose of the inquiry—statement by committee chairman.
2. The status of the ophthalmic disorders:
   - What are the ophthalmic disorders?
   - Mortality, morbidity figures?
   - Costs of ophthalmic disorders to the Nation in terms of lost productivity, wages, tax revenue, welfare services provided by community, State, or Federal Government?
   - Cost of ophthalmic disorders to the individual and family in terms of medical expenses and personal tragedy?
3. The attack on the ophthalmic disorders:
   - What do we know today concerning methods of prevention, diagnosis, and cure of the ophthalmic disorders?
   - In terms of the knowledge available, what medical, educational, and other facilities and what medical manpower is presently available to deal with these problems?
   - What research has been achieved in the past decade to successfully combat the ophthalmic disorders; to what degree is new knowledge being applied; how profound is the research attack on these problems, to what degree is manpower being available to combat these disturbances?
4. The needs of the future:
   - How much must medical ,paramedical facilities and services be extended to meet the problems in various ophthalmic disorders; what is needed and what are the present and probable financial handicaps in securing them?
   - Promising areas of research which must be pursued, new areas of research to be opened up in this field vitally necessary.
5. What can we do organizationally or by legislation about strengthening the Nation's attack on the ophthalmic disorders?
   - In research, research facilities, and training?
   - In medical, paramedical, and other services?
   - In education, scientific and public?

PARTICIPANTS

Dr. Lorand Johnson, professor of ophthalmology, Western Reserve University School of Medicine
Miss Kathern F. Gruber, assistant director, American Foundation for the Blind, Inc.
Dr. Franklin M. Foote, executive director, National Society for the Prevention of Blindness
Miss Mildred Weisenfeld, executive director, National Council to Combat Blindness
Mr. Hulan Walker, National Council to Combat Blindness, Inc.
Dr. Pearce Bailey, director, National Institute of Neurological Diseases and Blindness

The CHAIRMAN. I understand the discussion leader today will be Dr. Lorand Johnson, University Hospital, Cleveland, Ohio. It has been our custom as you doubtless know, Dr. Johnson, to handle our meetings rather informally. Will you please, therefore, begin by introducing the members of your panel and giving us some of the history and background of each.

STATEMENT OF DR. LORAND JOHNSON, PROFESSOR OF OPHTHALMOLOGY, WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE

Dr. JOHNSON. I am Dr. L. V. Johnson, professor of ophthalmology, Western Reserve University School of Medicine.

I will say in opening that I never enjoyed such a nice presentation as we have just witnessed from the neurological group. I regret very much that we cannot present for you a disease-by-disease discussion of the various entities in blindness. I wish that we might have among us someone to describe cataracts, to describe glaucoma, to describe retrolental fibroplasia, and these other diseases.

The best we can do, certainly in the time we have left, is to make a general discussion of the matter of blindness and hope that the disease entities may somehow be included in your minds, even though not in our discussion.

In opening the discussion on the problem of blindness there are a few items that I might like to present to you.

It is estimated that there are more than 600,000 blind and partially sighted in this country. Less than $400,000 was spent by our Federal Government through the Institute of Neurological Diseases and Blindness for research in the prevention of blindness during the year of 1952—less than 57 cents per person in this category.

If the 1 million persons who are blinded in 1 eye are included, we observe that the Institute of Neurological Diseases and Blindness had available for research less than 3 cents per person with limited vision. If each person with limited vision were to write to you Congressmen requesting adequate research support, the postage alone would equal the present appropriation for research to prevent blindness.

Concurrently, an estimated $150 million was spent for the inadequate care and rehabilitation of the blind. A mere statement from their oculist entitled these people to an extra $600 income-tax exemption, a potential $360 million of top-bracket taxable income.

It is impossible to estimate the amount of taxable income which would have been earned by these unfortunate blind had they sufficient visual acuity to be employable.

Assuming only the income provided by the minimum-wage law, another $500 million worth of taxable income would be lost.

Not all blindness can be prevented by research. Accidents are a very important cause of blindness in this country. The Industrial Commission of Ohio alone spent $5.5 million for the settlement of eye claims out of an annual expenditure of $20 million for all industrial claims.

The inadequacy of proper facilities for the care of injured eyes is obvious from these figures, and it is certain that the industrially injured are on the average far better treated than are average citizens who have less opportunity for medical direction.

There are 3,069 counties in the United States, and there are but 3,400 oculists certified for practice by the American Board of Opthalmology. This board of certification has been in existence for 20 years, and a large number of these certified oculists are now dead or retired from practice. With definitely less than one oculist per county, it is obvious that a sufficient number of trained men are not available for clinic practice.

Prior to the establishment of the Institute of Neurological Diseases and Blindness there were but half a dozen laboratories in established eye institutions and medical school departments where any continuous research of a basic nature was being conducted. So scanty were these facilities that even early meager assistance from the Institute for Neurological Diseases and Blindness soon nearly supplied the intellectual and laboratory research potential of these institutions.

In general, moneys for increased personnel have been limited but available. Money for increased laboratory construction and the development of new laboratories has not been possible.

Provisions for training new laboratory personnel, as well as personnel in clinical research, are recently announced, but it has been mentioned that space requirements are essentially saturated as compared to the preresearch era. The intramural activities of the Institute will no doubt aid in this development. However, one cannot exclude the enormous potential for training, consultation, and direction which must be obtained from the complete facilities of all of our medical schools and hospital clinical services. Deserving eye-research laboratories in close proximity to a medical-school faculty must be provided with money to develop and expand.

Furthermore, clinical ophthalmologists must be in close contact with any sizable research laboratory. Selected clinical patients may be aggregated into Bethesda but the intramural clinical facilities can never equal the combined patential of all of the clinical facilities of the Nation's medical centers.

There must be a greatly increased number of capable medical students who choose the broad field of ophthalmology for their career. There are obvious reasons why so few medical students even know of the potential opportunity in the field of blinding eye diseases.

The traineeship program of the National Institute for Neurological Diseases and Blindness should be made effective by provision of sufficient money to allow the activation of a reasonable percentage of applications submitted. This is not now possible with the funds available.

Institutions providing basic training in ophthalmology should be given financial aid for extension of their instruction, especially in the category of providing laboratory space and equipment for instruction in ophthalmic basic sciences.

Adequate funds for the activation of current provisions for institutional graduate medical training grants should be immediately provided, including provision for salaried instructors who can extend the teaching facilities of medical centers into the various State hospitals and county hospitals for the chronically ill. The enormous facilities of the various city hospitals for the indigent should be developed for better teaching centers.

Laboratories in an ophthalmic training center serve a dual purpose. Not only is there developed a wealth of fundamental data of common value to all working in the field of ophthalmic research, but there is further the decided advantage that this local personnel may teach and motivate in the training program.

Assuming from the foregoing testimony that an adequate number may be properly motivated to the necessity for service in the field of blinding eye disease, there remains still one most important aspect for training. Notwithstanding recent emphasis, most hospitals still adhere to the policy of utilization of interns in relationship to hospital needs rather than to the policy of training doctors in proportion to community needs. As an example, in the year of 1900 when most childbirths occurred in the home, hospitals were unable to train a sufficient number of good obstetricians to meet the community need. Fifty years later, with most mothers demanding the safety and convenience of a hospital, residents in obstetrics are still chosen with regard to 24-hour hospital needs, rather than to community requirements. The facilities for hospitalization for such specialties as ophthalmology, neurology, and neurosurgery are, in most teaching centers, so limited that relatively little activity is present to motivate medical students into these appendages to the main body of medicine. Most major hospitals at training centers allocate beds for staff requirements rather than for training for community need and as a result specialty-training facilities are diluted among so many community hospitals as to make none outstanding for training purposes.

The "leper and the blind" have traditionally been cited for special compassion, and yet only the leper has attracted Federal interest in the realm of medical institutional construction. A special case should be provided through Hill-Burton building assistance, for the creation of eye institutes for diagnostic and therapeutic care, as well as surgical rehabilitation for the blind. May I cite as an example, that the entire State of Ohio has no ophthalmic institute. Nearest specialized facilities are at Chicago or Philadelphia or in the near future at Toronto, Canada. It is beyond the capacity of a medical school to provide such facilities for an entire community, and it is traditional that medical centers provide only sufficient facilities for meager student-teaching purposes and not for adequate resident training or for prevention or rehabilitation.

Notwithstanding the remarkable achievement of the understanding of yellow fever—of far greater economic and humanitarian significance to this country, has been the prevention and treatment of ophthalmia neonatorum (sore eyes of newborn babies). Equally im-

portant is the prevention of total blindness by tabetic optic atrophy (dead optic nerve from syphilis). Therapeutic cortisone now does, to a large extent, prevent blindness from inflammatory diseases of the cornea and from iritis. Does basic research pay dividends?

A more recent result of research in the blinding eye diseases is the elimination of blindness caused by trachoma and the consequent ability to close the "Indian schools," since the isolation of these racially susceptible carriers of trachoma was no longer necessary. Recently reported research, and the clinical activity by the Institute of Neurological Diseases and Blindness, provides early optimism that the combination of experimental (animal) research and a nationwide statistical survey, may now allow the prevention of retrolental fibroplasia. This new disease of premature babies has, during its short life span of 10 years (from the first identified baby to the present probable understanding of its cause and prevention), blinded probably 4,000 babies. The estimated cost for the inadequate care and education of the blind baby is $100,000 during its lifetime, an estimated public future obligation of $400 million incurred during a brief 10-year duration. Successful research at a cost of 10 cents per blind baby. A research cost of 10 cents to prevent an expenditure of $100,000. Does clinical research pay dividends?

I am optimistic that with adequate finances and facilities, many causes of blindness such as diabetic retinopathy—the tragic blindness that looms as the certain future for every diabetic if they live sufficiently long—will, through basic research, be understood and prevented. Better diabetic care is already prolonging the life expectancy.

Legislative unfamiliarity with the program needs, or adherence to a previous budget base, are the two major obstacles to the reduction of the incidence of blindness, and both obstacles spell lack of dollars. The very capable staff of the Institute of Neurological Diseases and Blindness know how to administer efficiently all appropriated funds and have excellent information sources concerning the institutions most deserving and most certain to obtain results from this financial support.

We trust there will be aroused an economy-minded electorate who will demand that money be spent for research, training, and improved clinical facilities to replace the tremendous economic loss to this Nation through preventable blinding eye disease. Funds must be made available not only for training additional personnel but for new specialized laboratory facilities, ophthalmic institutes for clinical research, for the diagnostic and therapeutic custody of potential blinding eye-disease patients, and for surgical rehabilitation as well. The meager $400,000 for research for the prevention of blindness in 1952 was a shameful achievement after 175 years of government "for the people." A sum of $20 million would be more realistic to combat the challenge of blindness. Thank you.

The CHAIRMAN. Are there any further questions, gentlemen?

Who will be your first witness, Doctor?

Dr. JOHNSON. Our first witness will be Miss Kathern F. Gruber, assistant director, American Foundation for the Blind, Inc. Miss Gruber.

STATEMENT OF MISS KATHERN F. GRUBER, ASSISTANT DIRECTOR, AMERICAN FOUNDATION FOR THE BLIND, INC.

Miss GRUBER. Mr. Chairman and members of the committee, I am Miss Kathern F. Gruber, assistant director, American Foundation for the Blind, Inc., and I have brought with me some material to place in the record when I have completed my presentation.

The American Foundation for the Blind, a national, private research and consulting agency in the field of blindness, comes before this committee to submit a statement dealing primarily with two subject matter areas in which the committee has expressed definite interest:

The estimated prevalence of blindness in the United States.

The estimated economic burden placed upon the Nation because some of its citizens happen to be blind.

The actual number of blind persons in the United States is the subject of perennial questions since there is no detailed census which provides that information. The United States Census Bureau for many decades attempted to include an enumeration of the blind in its regular decennial census of the population. It developed, however, that no matter how great the care taken, the figures reported never seemed accurate or reliable. The difficulty of applying a definition of blindness uniformly and the unwillingness of some families to admit the presence of a blind family member were two of the major reasons that the reporting tended to be seriously incomplete.

The census authorities themselves recognized these weaknesses and, as a result, no census of the blind was taken in the general population census of 1940 nor in any later census. In lieu of this, the American Foundation for the Blind and the National Society for the Prevention of Blindness have, since 1929, jointly sponsored a committee on statistics of the blind whose purpose it is to study the problems of statistics of blindness and to make recommendations for the improvement of such statistical data.

The work of this committee, under the able chairmanship of Dr. Ralph G. Hurlin, of the Russell Sage Foundation, has resulted in the release of a number of surveys and estimates concerning the prevalence of blindness in the United States, with each new estimate always showing an upward revision of figures. The most recent published report is that of July 1, 1952, complete copies of which are being given to each member of this committee. That report indicates that as of July 1, 1952, there were 308,000 blind persons in the United States.

However, applying the same statistical formula used by Dr. Hurlin in that report to the United States Census Report issued on July 1, 1953, it is estimated that there were 314,000 blind persons in the United States on July 1 of this year.

It should be understood, at the outset, that in these reports, a blind person is one whose loss of vision brings him within the following definition of blindness which is most frequently used by Federal and State governmental bodies:

> Central visual acuity of 20/200 or less in the better eye, with correcting glasses; or central visual acuity of more than 20/200, if there is a field defect in which the peripheral field has contracted to such an extent that the widest diameter of visual field subtends an angular distance no greater than 20n degrees.

In lay language, this means that the definition of blindness includes not only those persons totally blacked out but also those with some remaining vision, which can range from bare light perception to an amount which enables them to see at 20 feet what the person with normal vision can see at 200 feet; and the definition also includes those whose field of vision is so restricted that if they were to grasp a 12-inch victrola record between the thumb and forefinger of each hand and hold it out at arm's length, they could not see their fingers grasping the record. While it is admitted that the loss of one eye is a distinct handicap, the one-eyed person is not considered a blind person in this report.

For the purpose of this hearing today, it seems advisable to highlight certain portions of Dr. Hurlin's report of July 1952 as follows:

Rates of prevalence of blindness in the respective States were determined by the application of a complicated statistical formula arrived at by Dr. Hurlin on the basis of three factors:

1. The composition of the population with respect to age.

2. The composition of the population with respect to race or nonwhite components (Negro, Indian).

3. The public-health standards of the State in terms of the infant death rate.

The series of estimated prevalence rates is anchored on a rate for North Carolina computed from an actual count of blind persons within that State made by the State commission for the blind as of the end of June 1952.

The average estimated rate per thousand population in the entire Nation is 1.98.

The lowest rate—1.40 blind persons per thousand population—is that for Utah.

The highest rate—3.42 per thousand population—is that for New Mexico.

The estimated rates of all the States reveal a geographic relationship with 10 of what we might roughly call Southern States and the District of Columbia having a rate higher than 2.4 per thousand; 13 of what we might roughly call border States and the State of Maine have a rate between 2.0 and 2.3 per thousand; while the remaining 25, or Northern States, have a rate less than 2.0 per thousand.

There is no evidence that the racial factor represents a true biological difference. Rather, it is probably a reflection of less education and lower economic standards of the Negro and the Indian which have affected their ability to withstand disease.

The present method of Dr. Hurlin of making estimates of the rates of prevalence of blindness is designed to approximate differences in the rates for States at a given time; it does not serve as well for estimating changes with time.

Because eye diseases—especially cataract and glaucoma—occurring most frequently among older persons accounts for at least two-thirds of existing blindness, and because the proportion of the population aged 65 or over increased by almost 20 percent from 1940 to 1950, it is not unreasonable to assume that the prevalence rate of blindness as well as the number of blind persons will continue to increase. This assumption is additionally augmented by the prevailing incidence of blindness among prematurely born babies. At both extremes of the life span medical science seems to be saving life or prolonging life, but,

ironically, that same science seems not to be able to cope with the serious and negative byproducts of its own efforts.

It is estimated that, unless medical research makes a very real contribution to the prevention of blindness area, there will be at least 60,000 more persons who will lose their sight permanently within the next 10 years.

The American Foundation for the Blind is not medically oriented. We leave to those organizations concerned with the prevention of blindness this very important part of the presentation concerning diseases of the eye and the specific medical research needed to control or eliminate them.

We turn now to the second part of our presentation which concerns the estimated economic burdens placed upon the Nation because some of its citizens happen to be blind. It is generally accepted among workers in our field that about 10 percent of the blind are under 20 years of age and that about 50 percent are over 65 years of age; and also that about 25 percent of all the blind are employable and that about half of the latter can be employed only in sheltered workshops and in home industries, while the other half can be employed in competitive industry and in the professions. Applying these generally accepted percentages to our national estimate of 314,000 blind persons in the United States as of July 1, 1953, we would have 31,400 under 20 years of age; 157,000 over 65 years of age; 36,250 employable in sheltered workshops and in home industries; and 36,250 employable in competitive industry and in the professions.

What do these figures mean to the economy of our Nation? Conservatively speaking, about 20,000 of the blind persons under 20 years of age should be in school. However, according to our best information, only about 7,500 are enrolled at the present time. Figures from the Research and Statistics Standards Section of the United States Office of Education show that it would cost the Nation approximately $2 million per year to educate these 7,500 if they were sighted. However, because they are blind, it is costing the Nation approximately $15 million per year to educate them. Blindness here is adding about $13 million per year to the public education costs of our Nation. However, for the record, we should like to submit that this amount is not nearly sufficient to give the present number of blind children an education equivalent to that which they might have had if they were sighted.

Ninety-eight thousand five hundred and thirty-six blind people are presently receiving public assistance and some of them are receiving medical care at public expense. According to the Social Security Bulletin of August 1953 and the 1951 annual report of the then Federal Security Agency, an annual amount of about $70 million was spent on public-assistance grants and medical care for blind people, including administrative costs. While we introduce this figure to impress you with the dollar cost of blindness, we must, however, for the record, remind you that the average grant of $54.02 per month is far from adequate and if our Government could possibly afford it, this monthly grant should be materially increased.

In order to make it possible for most of the estimated employable blind of 78,500 to become actually employable, our Federal and State Governments are spending, annually, about $12 million to admin-

ister programs of vocational rehabiltation for blind individuals. At the risk of being monotonous, I must comment again, that the amount of money being spent for counseling, training, and placement of blind people is tragically low.

Supplementing the above-mentioned programs of education, public assistance, and vocational rehabilitation, our Federal Government spends about $2,500,000 per year to carry out the programs of the Division of Books for the Blind of the Library of Congress and of the American Printing House for the Blind of the United States Department of Health, Education, and Welfare. This amount represents a worthwhile, yet still inadequate sum. Preferential reduced postage rates necessary to send our present embossed and recorded literature and equipment for the blind through the mails represents another investment of our Government in helping the blind.

Public moneys, then, in the amount of approximately $98 million a year are spent on programs for blind people in our country.

A rough estimate of the combined budgets of the some 250 private agencies for the blind throughout the Nation is about $50 million. I am submitting this Directory of Activities for the Blind in the United States and Canada for the exhibit at this point. The combined total of public and private money spent each year for the blind of our country approximates $148 million. This figure does not include the several million dollars which our Government spends annually on a very special segment of our blind population—the war blinded. And lest you may think that the war blinded should not be included among those who might benefit from medical research, let me hasten to say that not all war blindness is the result of direct enemy action; about 18 percent is the residual of diseases affecting the eyes.

These, then, are the statistics concerning the estimated prevalence of blindness in the United States and the resultant estimated economic burden placed upon the Nation: An average prevalence rate of 1.98 blind persons per every thousand population or 314,000 blind persons in the United States based on the general population figures of July 1, 1953; a total cost to the Nation of approximately $148 million each and every year. Our people are accustomed these days to hearing about large sums so, simply for the sake of effect, you might consider that this means that over the next 10 years, if blindness does not decrease, it will cost the Nation $1½ billion, a shocking amount, but—even more shocking—not nearly enough.

But this is the cost in dollars and cents only. If we have a moral obligation to inquire into the dollars-and-cents cost, we can be accused of moral guilt if we do not inquire into another cost which cannot be measured in dollars and cents—a cost which is measured in terms of mental and psychological and physical barriers and in terms of the personal dignity of every blind individual in this country. When we face that intangible cost squarely, how can we sit by and not ask this important question—"What are we doing about it?"

As a government, how do we feel about spending so many millions of dollars each year to ameliorate the condition of blindness and such a very small amount to prevent it? As a government, have we not observed the shameful exploitation of the condition of blindness in order to try to raise private funds to prevent it? As a government, should we not understand that blind people have already given

enough when they have given their sight; that they should not be asked to surrender their individual and collective dignity in addition. Let us think more in terms of public funds for public causes.

As a representative of the American Foundation for the Blind and speaking in behalf of the blind people whom we are serving, I wish to express appreciation to this committee for holding these public inquiries on the causes and control of some of the principal diseases of mankind. I thank the committee for permitting me to appear here today and make this presentation.

The CHAIRMAN. We certainly are very appreciative of the statement which you have just made. It is exceedingly comprehensive and gives us abundant information that can be very helpful to this committee and we thank you.

Are there any questions?

Mr. KLEIN. I want to ask Dr. Johnson a question. I think you said, Dr. Johnson, in your statement, that we spent $400,000 for research?

Dr. JOHNSON. For research in the blinding eye disease.

Mr. KLEIN. Was that directly from the Government?

Dr. JOHNSON. Through the Institute of Neurological Diseases and Blindness.

Mr. KLEIN. Was that a grant from the Government to the Institute?

Dr. JOHNSON. $400,000 was the total amount; yes, sir. Is that right, Dr. Bailey?

Dr. BAILEY. Dr. Stone, can you verify that?

Dr. STONE. Yes, sir. We awarded through the research grant program $392,186 out of fiscal 1954 funds and the previous fiscal allocation was $251,000.

Mr. KLEIN. This is the most you have ever received?

Dr. JOHNSON. Yes, sir.

Mr. HELLER. Are there any private contributions?

Dr. JOHNSON. We will come to that in another paper, sir. May we defer your question until later?

Mr. HELLER. Yes.

The CHAIRMAN. Are there any further questions?

You may proceed, Dr. Johnson.

Dr. JOHNSON. The next presentation will be from the National Society for the Prevention of Blindness and Dr. Franklin Foote will make that presentation.

STATEMENT OF DR. FRANKLIN M. FOOTE, EXECUTIVE DIRECTOR, NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS

Mr. FOOTE. I am Dr. Franklin M. Foote and I am a physician. I come from North Salem, N. Y., in Westchester County. I am executive director of the National Society for the Prevention of Blindness, with headquarters in New York City. We work throughout the United States.

My background is in the field of preventive medicine and public health, in which I have worked in the States of Connecticut, Tennessee, and as assistant professor of preventive medicine at Cornell Medical College. In December 1942 I went into active duty in the Army.

I have been associated with the national society since I got out of the Army in 1946, and what I have to say is based, in part at least,

on statistical studies—biochemical and epidemiological studies, which the national society has made for 25 to 30 years, and is also based on observations which I have made in the last several years as I traveled around the United States, visiting between 30 and 40 of the medical schools, laboratories doing research in this field, as well as State health welfare and education agencies for the blind and others working in the field of prevention of blindness and the improvement of vision and sight restoration.

I would like to comment a moment on some of the figures that Miss Gruber gave you.

The study which is reported by Dr. Hurlin on behalf of a committee supported by both of our organizations indicates that if you got all of the blind men and women and children together in one spot in one city, gentlemen, we would have a city the size of Miami, Fla.; larger than Akron, Ohio, or Providence, R. I., or Omaha, Nebr., in which every man, woman, and child is blind.

If you could think of it in those terms, I think you can visualize the extent of the problem today.

Again, basing it on Dr. Hurlin's figures, and if we take the average life expectancy of the people now alive, including ourselves, I believe as a fairly conservative estimate, that three-quarters of a million of those Americans alive today will be blind before they die. So, the problem is a little larger than simply the 314,000 figure which was mentioned.

There are about 1 million in this country with glaucoma—one of the blinding eye diseases which creates pressure within the eyeball—who do not know they have it and who will face blindness unless proper treatment is given at the proper time.

Then, we get divisions in the causes of blindness and there are a great many diseases that cause blindness. In addition to that we have the injuries which occur to the eye. Injuries cause roughly 9 to 10 percent of the blindness. I am now quoting from a paper which Dr. Walter Lancaster, of Boston, and I presented before the American Medical Association at a scientific meeting in 1950, a study based on observation of 50,000 blind men, women, and children.

This study was made in cooperation with schools for the blind throughout the United States, in cooperation with agencies for the blind, welfare departments, and others serving the blind, all of whom in order to carry on their activity had the actual diagnosis of the cause of blindness by the ophthalmologist who examined the patient. However, of the total 90 percent of the blindness due to diseases of the eye, we can break that down still further. We know that about 43 percent of the causes of blindness are due to causes in which we know the nature of the underlying conditions. For example, 22 percent of all those now blind are due to infectious causes—to germs—producing conditions within the eyeball. We have seen a tremendous improvement made in this cause of blindness because of efforts made in many different directions, particularly by local public health units.

Some of that has been done through grants given them by the Public Health Service under the provisions of the Social Security Act passed in 1935.

Infectious causes of blindness is the principal cause of blindness among children and it has decreased 50 percent in the last several years.

Dr. Johnson mentioned another disease, ophthalmia neonatorum, which decreased around 97 percent in the last 45 years. Injuries are a cause of blindness and have decreased somewhat. Among children there has been about a 30-percent decrease during the last 10 or 15 years due to educational activities by many groups, and I would like to commend the House of Representatives in this connection for its wisdom in passing the bill sponsored by Congresswoman Marguerite Stitt Church of Illinois to prevent the interstate travel or traffic in fireworks—the importation of fireworks into thirty-odd States in which there was indiscriminate public sale and which is not permitted by State law, and yet there is now going on bootlegging of fireworks within those States. I know that this committee has a particular interest in that type of legislation and that bill is now before the Senate.

Again, going down the list of some of these diseases, I will mention 1 or 2 of which we know the causes. Poisoning from wood alcohol and lead cause about 1 percent of blindness, tumors about 1 percent, and general diseases 6 percent. This includes diabetes, which causes about 2 percent of all blindness. That leaves about 50 percent of all the total causes of blindness—57 percent, rather, due to conditions in which we do not know the nature of the underlying cause. A name can be assigned to the condition such as retrolental fibroplasia and other long impressive diseases, but we do not know the nature of the underlying cause.

This does not mean always that nothing can be done about the condition. We do not know the causes of most of the cataracts, most of the glaucoma which occurs, and yet a good deal can be done in treatment in either preventing loss of vision in the case of glaucoma or in restoring sight in the case of cataracts.

We regretted very much about 2 years ago that a study which was undertaken in the city of Philadelphia with the help of the Division of Chronic Diseases and Tuberculosis of the Public Health Service—a study of early diagnosis in glaucoma—that that had to be dropped after 1 or 2 years' help from the Public Health Service because of curtailment of funds. That is the type of thing which does not come perhaps under the jurisdiction of one particular division, but which might come under another as a demonstration project. It is one that perhaps some other branch of the Public Health Service might again take up.

The causes of blindness can also be classified by the portion of the eye involved, and I am not going to go into the several score of these that there are.

I mentioned glaucoma already, which causes about 12 percent of all blindness, in that the entire eyeball is affected. The front of the eye—the transparent window of the eye—the cornea—is involved in about 14 percent of all blindness. Cataract, as you know, affects the lens inside the eyeball, accounting for about 19 percent. Some of the deeper tissues of the eye, the choroid and retina—and when I mention these, perhaps some of you know of choroiditis and the various other diseases which come under this heading—altogether they add up to about 14 percent of all blindness. These are not all caused by the same kinds of conditions. For example, some conditions of the cornea may be due to nutritional deficiencies; some of them are due to heredity; about 4 percent, perhaps, or more are due

to aging or degenerative processes, in which we simply do not know the underlying factor. The optic nerve—the nerve leading from the eye back to the brain—the visual pathways and visual centers, account for 18 percent of all blindness.

Now, I have told you some of the things that we do not know, and yet we do know a good deal about the eye and there are many who feel we know a good deal better than we are doing.

We feel a good deal of the blindness that is now occurring, is occurring unnecessarily, and estimates on this vary from 25 percent to 75 percent. We would take an inbetween estimate of possibly 50 percent. But, in the light of present scientific knowledge, about one-half of the blindness that has occurred among our present population could have been prevented were the right thing done at the right time. That means 50 percent could not have been prevented even with the best possible medical care given at the earliest possible time.

Dr. Owens of the staff of Johns Hopkins University's School of Medicine, department of ophthalmology, made a study of 104 cases of blindness in Baltimore—a study which was published in 1951, and I have a copy which I can give the committee clerk.

In this study, to confirm what I said, he found that there were 50 cases where, had the right thing been done at the right time, blindness could have been prevented.

There were 54 cases who received the best possible care in his opinion and, yet, were permanently blind and sight could not be restored. You might think it surprising that blindness could have been prevented in some instances, and yet, the right thing was not done. In 8 of these 50 cases in which he believed that occurred, the blindness was due to injuries which he believed were preventable—injuries to both eyes. In 32 cases he felt the entire responsibility, or at least the major responsibility, lay on the patient himself or herself. He found delays from the onset of signs or symptoms of serious eye trouble ranging from 10 months to 16 years. In the case of about a dozen of these cases, the patients lived within the city of Baltimore, a city in which there are 2 medical schools, a city with clinical facilities, and in which there is certainly no lack of medical care, and yet they delayed from 10 months to 16 years from the date they first noticed the symptoms or signs of trouble.

In other cases, other things entered into it. In some instances the persons went down to the local 5 and 10 cent store, as they are permitted to do in Maryland and in the District of Columbia—over which the Congress of the United States has jurisdiction—and they selected their own eyeglasses over the counter, and sometimes went back a half dozen times and selected eyeglasses which seemed for a short period of time to permit them to see a little bit better, and they did that, postponing calling a physician or even an ophthalmologist, for months and even years. I think this is a case where someone should do something in the way of legislation. There are 4 States which have legislation to eliminate that factor leading to neglect as the cause of blindness, but I would think it would be within the province of Congress to do something about a situation in our Nation's Capital.

Mr. HESELTON. Would you be kind enough to name those States?

Dr. FOOTE. Minnesota, Massachusetts, Rhode Island and New York State; they are the four States with that legislation.

Passing on for a moment to a discussion of the question of controls, and I will do this very briefly because I know our time is passing, it seems to us as a result of studying these causes in great detail, which I cannot go into further now, that control can be broken down into three different categories. One is education—the need for public education—and we believe also a need for professional education. There is a need for more ophthalmologists practicing ophthalmology, and there is a need of better education of other professional groups, particularly general medical practitioners, ophthalmologists and other groups.

There are certain services which need to be provided on a larger scale. For example, early case finding among children. In only one-half of the schools of this country is vision tested. For example, vision testing is not done on school children annually as it should be done. Early case finding of eye disease among adults has only been done in 1 or 2 areas and on a very sketchy basis. These are matters that health departments could do through support given by grants-in-aid from the Public Health Service; boards of education also have a place, and voluntary agencies have a place in this case-finding problem.

Other services that need to be provided on a larger scale are the provision of treatment facilities and follow-up facilities for persons with eye disease. The Office of Vocational Rehabilitation at the Federal level and the State level has been doing a very good job among the groups which can be classified as being rehabilitated groups. Certain welfare departments, as in the State of North Carolina, Louisiana, Kansas, California, Florida and others are doing a splendid job among the recipients of aid to the blind which they receive under title X of the Social Security Act. Those programs are entirely sponsored and financed by the State. There is no Federal fund for medical care given to blind persons in those programs. We feel all the States should have as good a program, however, as the best ones among those I have listed. There has been one obstacle placed in the way of carrying this out by the Congress in the year 1950.

In amending the Social Security Act in that year, the Ways and Means Committee chairman had introduced a very brief phrase permitting examinations of blind individuals by optometrists, by inserting the word "or by optometrists," which was added to the bill. We opposed it at that time and we still oppose that practice, because, as I described to you, blindness is caused either by injury or disease and optometrists are permitted by law in no State in this country to give a diagnosis of disease in the case of a person with eye trouble. They are only permitted to examine them for glasses and to prescribe glasses and fit them with suitable glasses and to provide visual testing. They are not permitted to diagnose or treat eye diseases, and yet under the Social Security Act at the present time they are permitted to examine the blind to see whether or not they deserve aid under title X, and such aid as provided under title X includes medical care. So, there is another point that I think deserves attention by the Congress.

The Lions Clubs and various other volunteer agencies over the United States have been interested in providing treatment facilities and have helped a great deal in financing treatment for some of these persons, particularly in certain regions of the country through organizations that they have formed, and they are beginning to help in the financing of research in the eye field.

That brings me to the third point of the program I have mentioned: education. I have mentioned services that need to be provided, and research I think is the third and perhaps the most important factor that needs to be emphasized. I said 50 percent of blindness cannot be prevented in the light of our present knowledge, even when you get the best possible care, and for 57 percent of the blindness we do not know the nature of the underlying cause.

This summer I delivered a paper at the American Association of Workers for the Blind describing some of the advances that have been made in research in the last 3 years in the provision of funds for research. The distinguished members of our research committee of the national society sponsored a study of research and progress throughout the United States in 1949, just before the Institute was set up. At that time we found a total of $906,000 available in both public and private funds for research in this field. The study was repeated for the year 1952, and for that year we find a total of $1,600,000 available, an increase of about 74 percent over 1949.

The setting up of the new Institute with a very small budget has so far greatly stimulated research in this field. It is a small start, however, compared with the need, and it is also very small with what it costs us for other things.

The American public last year spent between $4 and $5 million for the over-the-counter sale of eye lotions, eyedrops, to use in the eye, not on prescription of a physician, but on self-prescription, and between $6 and $7 million for cosmetics to be used in or around the eye to make the eyes more beautiful. The same year we spent $1,600,000 for research to keep those eyes seeing eyes. You have to compare the $1,600,000 figure with the $150 million that Miss Gruber recited as to what was spent. That figure includes funds from public and private sources, and the funds from the Institute of roughly $250,000. The remainder came from the medical schools themselves, foundations, and other organizations.

Mr. PRIEST. If I recall, the Institute figure was $400,000 on one occasion and I believe you mentioned $250,000.

Dr. FOOTE. It is $400,000 for the fiscal year 1954, but my figure was for the calendar year 1952.

Mr. PRIEST. I beg your pardon. I just wanted to be sure the record was correct on that.

The CHAIRMAN. Any questions?

Mr. HESELTON. I have no doubt of the effectiveness of the various groups that are interested in this problem. I just want to ask you a question based upon the fact that we have had submitted to us several organizations—the American Foundation for the Blind, the National Society for the Prevention of Blindness, and I understand there is the National Foundation for Research, and I believe that you mentioned another group. My question is this: Are those various organizations duplicating in any degree, or cooperating, and do you think the overall effort is not subject to any criticism?

Dr. FOOTE. I think there could be better cooperation, but I know there is no duplication. The need is so great that even with the funds that all of us are able to bear there are a great many research centers set up to do more research than they now do because of a lack of funds, and we sometimes supplement each other's funds in these

fields. We sometimes each give a grant to the same institution, but even with the total funds available that institution is not functioning to its full capacity.

Mr. HESELTON. Do you know whether or not there is a lack of expert personnel to attack this problem at the research level?

Dr. FOOTE. I think that there is a definite lack. I do not think the lack is as apparent as it might be. I think if you suddenly appropriated the $20 million that Dr. Johnson spoke of, and I would like to see that appropriated, we would have to scramble around pretty hard to spend that, but I think if you could look forward to such an appropriation in 3, 4, or 5 years and build up to it, and if you could make your grants, not to the narrowly restricted field in which they have been, and if there could be a broader field and if the funds could be provided for younger research men, I think the whole field would be helped enormously.

Mr. HESELTON. Do you know whether or not the National Science Foundation in its grants for fellowships and scholarships have provision for some of that type of work?

Dr. FOOTE. I understand, but I have not refreshed my memory on this recently, they have some funds for training fellowships, but not related to these eye diseases.

I think what the National Science Foundation is doing is splendid. I do not want to detract from it. It is fundamental. Just as cortisone had to be discovered by a biochemist and a pharmacologist, and penicillin discovered by a man in bacteriology, that is fundamental work, but there was a lag of 25 years of time between the time that penicillin was discovered and used clinically. I think there is a need for fundamental research in relation to clinical centers and research beyond anything the National Science Foundation can do.

Mr. HESELTON. I have before me a statement that 25 percent of the blinding eye diseases set forth are responding to the cortisone treatment and that 5,500 people can be saved each year due to the discovery in 1950 of the cortisone treatment of these diseases. That seems to be an extremely encouraging development, and being so recent I would think that would have some effect upon future research work.

Dr. FOOTE. I think that there are tremendous possibilities in this field. I do not believe that ACTH and cortisone are working quite as much a miracle now as was thought would be worked a year ago, but they are tremendously helpful because when an individual has an inflammation in the tissues in the back of the eye, and inflammation that may last only 2 or 3 weeks, and when that can be prevented from producing scar tissue and permanently blinding the patient by treatment with cortisone or ACTH, you prevent blindness in that person, but there are a great many other instances where it was felt it would be helpful in more chronic conditions, and the hopes that we once had for it have not been borne out, so I would not go as high as the 25-percent figure quoted there.

Mr. HESELTON. I believe that you did say, discussing one type of blindness, that diet was a factor.

Dr. FOOTE. Yes.

Mr. HESELTON. Is it a factor in all types of blindness?

Dr. FOOTE. We do not know. We need more fundamental research on that. We know that lack of vitamin A will affect some of the ex-

ternal tissues of the eye, and it certainly affects the retina, causing night blindness. We know that the lack of some of the B vitamins will affect the tissues of the eye. Vitamin C will affect the tissues of the eye. Vitamin C, or ascorbic acid, seems important to the metabolism of the eye, but we lack fundamental knowledge; we lack knowledge of vitamin C or ascorbic acid. What is it doing to the fluid of the eye, or the lens? There seems to be some connection, but so far we are actually groping in the dark, even though we know a good deal about the eye. We know that there are certain conditions, particularly of the cornea, produced by nutritional deficiencies.

Mr. HESELTON. Do you know whether or not the Atomic Energy Commission in its medical section concerns itself with the problem of blindness?

Dr. FOOTE. I do know that the Atomic Energy Commission is concerned about cataracts caused by radiation. Cataracts can be caused by a great many things, and by some things we do not know about. A number of individuals have had cataracts caused by radiation in Hiroshima and Nagasaki and they have been studied by the Atomic Energy Commission, and they have sponsored some very basic research in this field. I do not know to what extent they are studying other problems in relation to the eye.

Mr. HESELTON. Were they successful at all in providing any kind of a successful treatment?

Dr. FOOTE. Well, the treatment for cataract is the removal of the lens, and that can be done regardless of the cause of the cataract; nevertheless, there are complications. I think that they have learned as a result of their research—and here again I am talking from memory—a good deal about the doses of radiation that will produce a cataract. I am not sure what practical significance can be attached to this, though, because those exposed to radiation in sufficient dosage will actually be killed very shortly. Among those who survived within a given area, I think in Hiroshima, over a 100 did develop cataracts. I think the problem on that point is to keep them from setting off such an explosion in the first place in this country.

Mr. PRIEST. I think perhaps my first question should go to Miss Gruber. I believe you mentioned the total of public funds spent last year was $148 million.

Miss GRUBER. Public and private.

Mr. PRIEST. How much was public?

Miss GRUBER. $98 million.

Mr. PRIEST. Does that include payments by Social Security?

Miss GRUBER. Yes.

Mr. PRIEST. Did it include vocational rehabilitation?

Miss GRUBER. Yes.

Mr. PRIEST. $98 million of public funds. Do you have that also broken down as to State and Federal?

Miss GRUBER. The separation between State and Federal?

Mr. PRIEST. Yes.

Miss GRUBER. That is a difficult thing to do.

Mr. PRIEST. It is matching.

Miss GRUBER. Yes.

Mr. PRIEST. I realize that.

Does that include payments for veterans?

Miss GRUBER. No. The blinded veterans represent one segment of the population not included, the blind population not included.

Mr. PRIEST. I was just thinking of the disparity in expenditure of public funds, $98 million in social security payments and other rehabilitation programs, which is not any too much, but compared to less than $500,000 for the fiscal year for research, it seems to me like we need to recognize the importance of putting a little more to that $500,000 for research rather than stacking it at the top end. That is not deploring the fact it is there, because I think it ought to be, and even that, I think, is not enough, but the wide gap between the two figures impresses me a great deal, and I think it should begin more and more to impress the Congress and the Appropriations Committee and the Bureau of the Budget and all others who are in any way responsible for this sort of program.

Mr. HESELTON. Just as a matter for the complete record, I believe there are some additional allowances on income tax in the case of blindness.

Miss GRUBER. Yes.

Mr. HESELTON. Also, there was a recent law permitting an exemption up to $50 a month on the earnings of the blind people.

Miss GRUBER. Yes.

Mr. HESELTON. It is almost impossible to compute those.

Miss GRUBER. Mr. Walker has some figures to indicate the amount of money involved in the $600 exemption on the income tax.

Mr. WALKER. I think you will find that the Treasury Department estimates that on the number of blind people paying Federal income tax, allowing this deduction, the Federal Government loses approximately $300,000 in tax due to the exemption.

Mr. PRIEST. Would that be added to your figure, or is that included in your figure?

Mr. WALKER. That is not included in our figure because that is an amount that is not spent. It just is not collected, so to speak. It is a grant, so to speak, a privilege, or an extra exemption due to the extra cost incident to blindness. That figure was not included in the amount of public funds that we listed as being spent.

Mr. PRIEST. That figure was $300,000?

Mr. WALKER. That is the Treasury's estimate as of yesterday afternoon about 4:30.

Mr. PRIEST. I will not prolong the questioning any further. I want to say for the record that Mr. Walker, who has just given us this figure, is from my hometown. I have known him for a great many years. He has been very active in Nashville and in Tennessee and other places through the years for the blind, and I personally appreciate the contribution he has made and I know there are many, many citizens in his hometown that appreciate the very fine record he has made in the work he is doing. I want to say that publicly for the record at this time.

The CHAIRMAN. We appreciate what you have said, Mr. Priest. We have had the benefit of the attendance of Mr. Walker here today. I can understand when he gave figures that were as current as 4:30 yesterday afternoon why you are so meticulous and so helpful to the committee.

Miss Weisenfeld, we will be glad to hear from you at this time.

STATEMENT OF MISS MILDRED WEISENFELD, EXECUTIVE DIRECTOR OF THE NATIONAL COUNCIL TO COMBAT BLINDNESS, NEW YORK CITY

Miss WEISENFELD. I would very much like to speak personally for the point of view I represent here today, but unfortunately, because I have lost most of my vision, I am unable to read notes, and in trying to check my notes for this hearing I found that the points I wanted to make might be far too pertinent to produce from my memory. As I have written out a statement in a fashion as I would speak to you, I wonder if you would permit my secretary, Miss Kay, to read it to this committee for me.

The CHAIRMAN. Your statement will be made a part of the record. Miss Kay may read your statement.

(The statement was read, as follows:)

STATEMENT BY MILDRED WEISENFELD

Mr. Chairman and members of the committee, my name is Mildred Weisenfeld; my position, executive director of the National Council to Combat Blindness, Inc., 30 West 59th Street, New York City. I am a founder of that organization and have been serving in the capacity of its executive director since its inception in 1946.

The National Council to Combat Blindness was established for the purpose of stimulating and financing research into blinding eye diseases and visual deficiencies. It was conceived to meet the crying need for more adequate attention and support to ophthalmic research. The great emphasis prior to that time had been placed almost entirely on the rehabilitation of persons already blind. Until the council came on the scene no voluntary agency existed with the primary function of educating the public to the need and potential of research in the prevention of blindness and the awarding of research grants and fellowships to medical colleges and eye centers for that purpose, this, despite the fact that blindness was a growing menace in our Nation, that it had doubled in the last two decades, and that while $125 million was being devoted annually for the care of people after sight had been lost, in contrast to this but a meager $400,000 was being spent in the same period on medical research—research which could prevent this tragedy from striking.

Gentlemen, it may interest you to know that the National Council to Combat Blindness was founded by a handful of persons ourselves faced with either partial or total blindness. We had been through the frustrations, 100 times over, of seeking medical help only to find that science was not equipped with adequate knowledge to reverse our blindness or even halt its progress. In the pursuit of personal assistance we found that we were but a few of an army of countless thousands confronted with the same hopelessness. We were shocked to learn that our foremost medical colleges and institutions barely had funds available for research to explore the causes, the treatments, and the cures of blinding eye diseases. They needed desperately equipment, manpower, and material in order to go forward and wage an effective attack against blindness.

It was startling to learn the following facts: That 300,000 men, women, and children in these United States alone are totally blind; that 300,000 more have visual defects so serious as to create partial or almost total disability. Some of this number will maintain a glimmer of vision through life, but for many of this group the verdict of ultimate blindness has been passed by their doctors and they wait with dread as they gradually watch their sight fade. There are others, some of whom may be in this very room or who will be reading these very pages, who harbor one of the many eye conditions at present in an incipient stage, and who are yet unaware of the danger that threatens. In addition, statistics disclose that a million persons are blinded in one eye; that there are probably 800,000 with undetected glaucoma (a dread disease of the eye which can result in blindness), and that the estimated 2 million sufferers from diabetes whose lives have been prolonged because of the various insulins are now each potential candidates for a disabling eye disease.

We knew that this was a challenge that had to be met, and thus embarked on our important mission, encouraged in our firm conviction of the urgency of our undertaking by authorities in the ophthalmic field.

However, despite the fact that the National Council to Combat Blindness has been carrying on its fight for sight unrelentingly for 7 years, aggressively pioneering the cause for more adequate support to eye research and availing itself of almost every media through which to bring its message to public attention, the response on the part of the public has been negligible and wanting. We have only begun to scratch the surface. Those of us who conceived the idea of a national organization which would devote itself to collecting funds and distributing these funds for medical research did not anticipate the arduous effort it would entail to arouse public interest in this field of scientific research. The amount of public education necessary to stimulate voluntary contributions to research in eye diseases is vast. It is almost unbelievable to find how ill-advised the public is generally with regard to blindness. It is the common conception that the affliction of blindness is inevitable, hopelessly incurable, and due primarily to hereditary factors or injuries; that the only answer to the problem lies in rehabilitation of the blind and sympathy for them. The facts are that only 19 percent of blindness is hereditary and accidental; that the major cause of blindness is eye disease; that blindness is not hopeless; that our leading scientists are convinced that as much as 70 percent of blindness could be prevented with more adequate facilities, manpower, and research activity. And yet estimates from authoritative sources tell us that we, as a Nation, now spend upward of $125 million annually on rehabilitation, care, and welfare aid for the blind and that the amount expended in the same period for fundamental and clinical research to prevent blindness stands today at but a single million. This in face of the fact that blindness is steadily on the increase. It is ironic that while scientific advances have prolonged our life span, those latter years are burdened and marred by the ogre of blindness. Another contributing factor in the mounting incidence of blindness is that disease which is taking the sight of so many infants born prematurely. Here, while scientists have made it possible for these infants to survive, they have not been able to rescue them from a new and terrible eye disease which dooms these infants to lives of darkness.

The statistic which has been used is that someone in these United States loses his sight every 20 minutes, thus claiming 30,000 new victims annually. However in reading the Congressional Record of the hearings of the subcommittee of the Committee on Appropriations of the House of Representatives, April 15, 1953, I was astounded by the statement made by Derrick T. Vail, M. D., an outstanding member in the eye field and editor of the American Journal of Opthalmology. I quote in part:

"* * * it has been predicted that, by 1955, 132,500 American citizens will have become blind."

If I am interpreting this statement correctly, the annual incidence of blindness in our Nation will have again doubled by 1955. Certainly this is a grim prospect and a frightening one.

Let us disregard for just a brief moment the economic deprivations and social frustrations blindness inflicts on the individual and let us look at the situation coldly and practically from the taxpayers' point of view. For the fiscal year of 1951, the total amount of Federal, State, and local expenditures for aid to the blind is estimated at approximately $55,000,000; while in the fiscal year 1953 this estimate is approximately $64,000,000 (reference United States budget for fiscal year ending June 30, 1954)—this represents an increase of $9 million over a period of but 2 or 3 years, and does not include the lost revenue to our Federal Government resulting from the annual tax exemption of $600 to each blind individual. It is further estimated that the cost to educate and maintain one blind baby through its lifetime is $100,000. Multiply this by the estimated 4,000 new young victims of retrolental fibroplasia (the disease which causes blindness in premature infants), and the cost of seeing these infants through their lives reaches the staggering figure of $400 million. When one considers Dr. Vail's prediction of 132,500 additional blind by 1955, the potential burden on the taxpayer is appalling. Indeed, gentlemen, the penalty we would have to pay, both in human suffering and burdensome taxation, would only be consistent with the injustice we commit by our lack of support to ophthalmic research.

Gentlemen, as one representative of a group which has worked arduously and untiringly in the gathering of funds for eye research, I say to you today that the voluntary agency cannot alone meet the challenge of the research needs

in blinding eye diseases. The National Council to Combat Blindness, which is the agency primarily engaged in supporting such research, has over the past 4 years, in round figures, made grant-in-aid and fellowship awards totaling but $95,000. I refer you to the attached listings of these awards. I believe you will find these listings of interest upon examination, for it will reveal to you the meager sums which have been granted to some of the leading institutions of our land. I wish it had been practical for me to include with this statement the expressions of gratitude received by our organization from the recipient investigators and institutions for even this humble support, which does not begin to meet their requirements. It is a sad commentary and an injustice to the cause of eyesight when I must add to this statement that the $95,000 distributed by the council to the best of my knowledge, is the largest sum allocated in grants-in-aid and fellowship awards by any voluntary agency in this field. Our organization has had to deny in round figures $380,000 in requests for support which have reached us. These denied requests, however, hardly represent the need in the field since the very limited resources of the council are generally known to the profession, and scientists hesitate to file with the organization, knowing that their efforts to obtain meaningful support would of necessity have to fall by the wayside. For example, a survey undertaken by our organization, of 122 accredited medical colleges and eye centers in our Nation revealed that $6½ million could be profitably employed in facilities, training, and teaching programs, and straight research. This need was based on the replies received from less than one-half of the institutions to which the questionnaire was sent.

The directors of the National Council to Combat Blindness recognized in 1949 the urgent need for Federal assistance to expedite a sound program in eye research, and consequently it was our agency which took the initiative in bringing this pressing need before Congress. I was privileged to appear as one of the witnesses representing the council before the subcommittee of the Committee on Interstate and Foreign Commerce to attest to the need for the establishment of the National Institute of Neurological Diseases and Blindness. On behalf of all these who have been associated with me in this work, both lay and professional, I want to take this opportunity to express profound gratitude to Congress for the establishment of this Institute which, despite the fact that it has operated on a budget far too small to meet the many and varied demands in the field of ophthalmic research, has nevertheless unlocked a door of opportunity to the scientist in the field of eye disease and stands as a symbol of new hope and promise to those faced with blindness.

Gentlemen, it is virtually impossible for me to convey to you fully the many hardships and difficulties encountered by a voluntary agency, committed to the pursuit of gathering funds for research to prevent blindness. It seems that the tangible aids, such as Braille books, Seeing Eye dogs, and other rehabilitation services to those already blind, have far more dramatic appeal to the "contributing public" than does the appeal for research funds to find the causes, the treatments, and the cures of blinding eye diseases. Thankfully, there are any number of agencies which care for people after blindness has struck, but do you not agree that the time is overdue when research to prevent this tragedy should receive at least equal attention? I feel confident that with unyielding perseverance, in time public recognition and support of this important branch of medical research will come. However, we must not wait for this public recognition; we cannot and dare not in view of the distressing facts and overwhelming need. Gentlemen, I cannot stress too strongly the inability of the voluntary agency at this stage to shoulder this grave responsibility singlehandedly.

I have had occasion recently to meet with the distinguished members of our scientific advisory board and can attest to their strong belief in the great potential that research holds for finding the solutions to the problems now producing blindness. I welcome this occasion to tell you of the enormous value they place on the contribution the National Institute of Neurological Diseases and Blindness has already made in stimulating research activity in this area of medical research by the financial assistance it has given to date. It is imperative that such support not be withdrawn. It must instead be increased. The research activity which it has inspired should not be inhibited. It must rather be encouraged, and extended. ACTH and cortisone is one demonstration of the miracle of research. In the September 1953 issue of Today's Health, an article appeared by Paul de Kruif, in which he discusses the amazing healing and curative effects resulting from research in these hormones.

I have been advised by the chairman of our scientific advisory board, who was one of the pioneers in the use of these hormones in ophthalmology that the Federal Government had appropriated some $2 million for research study in ACTH and cortisone, of which probably less than $50,000 was used for research in the application of these hormones in eye disease, as a consequence of which thousands of eyes have already been saved from blindness. Without this Federal grant it is doubtful that this important scientific study would have gone forward as it had. Thanks to Federal aid, we are now on the road to the successful treatment of certain inflammatory diseases of the eye which have been responsible for about 25 percent of all blindness.

Another manifestation of the power of research are reports reaching us currently that a new lead may disclose the cause of the blindness attacking infants born prematurely. These reports, of course, have to await confirmation before they can be accepted as definite. If it is proven however that the cause of this terrible blinding disease has at last been discovered, it will be another testimonial to the value of organized research since the thousands of dollars which have been expended in searching for the cause of retrolental fibroplasia will be repaid by millions of dollars saved in the rehabilitation of such unfortunate infants.

However, the unsolved problems in the field of eye diseases remain many—cataract, glaucoma, optic atrophy, detachment of the retina, certain corneal opacities, retinitis pigmentosa—are but a few for which cause and adequate treatment are unknown to science. The specialty of ophthalmology is young, and the ground is fertile for pioneering effort. The unexplored areas are awaiting the initiative and genius of our modern scientists. Those who wish to delve into these unknown fields for the benefit of mankind must be encouraged with adequate financial support, facilities, and equipment. It would be unjust and a tragedy unnecessarily perpetrated on countless thousands to deny this support.

The dearth of dollars must not be allowed to stand as a barrier to progress which can mean hope in place of despair, sight instead of blindness.

I repeat, the voluntary agency cannot yet assume this enormous responsibility alone. It can only be met with Federal aid.

Gentlemen, before I conclude and with your permission I should like to be subjective for a few moments. To date I have lost 98 percent of my sight and although I classify myself—and I do this in all modesty—with that group of visually handicapped persons who has been able to make a reasonable adjustment to blindness, carry on a productive life and one in which there is social acceptance. I wish to go on record as saying that there is no substitute for sight nor are there any compensations for the loss of it. I know that I reflect the feeling of the many thousands who, like me, must live in darkness, when I say that there is nothing that anyone so fated, wants more, than the ability to see.

If I had been able to reach you at all in my plea for continuing and more commensurate Federal aid to eye research—aid which can mean that countless people will be spared the tragedy of blindness, perhaps my personal loss will have served a useful purpose.

Thank you for allowing me to be heard today. I appreciate this opportunity and am grateful to you for the privilege.

NATIONAL COUNCIL TO COMBAT BLINDNESS, INC.

Grant-in-aid awards prior to 1953

Institution	Project title	Amount
Boston City Hospital	Study into electrical responses of retina and brain in patients with amblyopia ex anopsia and suppression.	$6,000
New York Medical College, Flower and Fifth Avenue Hospitals.	Regional light sensitivity of the retina—technique and theory.	1,700
Northwestern University Medical College.	Quantitative measurements of ocular fluorescein fluorescence in normal and glaucomatous eyes.	936
Nuffield Laboratory of Ophthalmology, the Eye Hospital, Oxford University, England.	Investigation into the normal and abnormal structures of the vitreous humor by michrochemical and histochemical methods.	1,730
University of Pennsylvania	Virus infections of ocular tissues grafted onto the choricallantoic membrane of the chick membrane.	5,000
Retina Foundation, Massachusetts Eye and Ear Infirmary.	Acid mucopolysaccharides in the vitreous body; their role in the composition of the vitreous body and their relationship to the proteins in the vitreous gel.	5,000
University Hospitals, University of Iowa (continuation).	Electrical responses of retina and brain in patients with amblyopia ex anopsia and suppression.	2,700
New York University Post-Graduate Medical School.	Attempts to grow the virus of inclusion conjunctivitus, follicular conjunctivitus, and folliculosis.	1,296
New York Eye and Ear Infirmary	Investigation into the role of focal infection in the etiology of nonspecific ocular inflammation.	1,600
University Hospitals, University of Iowa	Investigation into the incidence and basic cause of cataract, hemorrhaces, and degenerative changes in the retina and optic nerve of alloxan diabetic animals.	1,200
University of California Medical School	Relationship of uveitis to bacterial allergy	1,200
University of Pennsylvania (continuation)	Virus infections of ocular tissues grafted onto the choricallantoic membrane of the chick embryo.	2,500
Government Hospital, Haifa, Israel	Investigation into factors affecting new vessel growth into the cornea.	2,500
Indiana University Medical School	Study into the mechanism of development of contralateral granulomatous uveitis from the use of horse serum in rabbits.	1,500
New York Hospital, Cornell Medical Center.	Retinopathy in diabetes	750
New York Medical College, Flower and Fifth Avenue Hospitals (continuation).	Regional light sensivity of the retina—technique and theory.	466
Retina Foundation, Massachusetts Eye and Ear Infirmary (continuation).	Acid mucopolysaccharides in the vitreous body	2,500
University Hospitals, University of Iowa (continuation).	Electrical responses of retina and brain in patients with amblyopia ex anopsia and suppression.	5,000
New York Eye and Ear Infirmary	The possible role of hyperstrinism in the etiology of retrolental fibroplasia.	2,500
Wills Eye Hospital, Philadelphia	Investigation of the intermediary reactions and the enzyme systems involved in the anaerobic glycosis of the lens.	3,750
New York Medical College, Flower and Fifth Avenue Hospitals.	Detection of plane polarized light by the human eye.	2,625
Stanford University School of Medicine	Visual characteristics of macular and peripheral retina in amblyopia associated with convergent and divergent deviation.	2,500
University of Louisville School of Medicine.	Role of estrogenic and androgenic substances on the retinal vascular pattern in alloxan diabetic rats.	2,445
New York Hospital, Cornell Medical Center.	Investigations into the efficacy of certain therapies in the treatment of retinitis pigmentosa and other night blinding diseases.	2,125
Yale University School of Medicine	Study of application of ACTH in primary glaucoma.	200
New York Hospital, Cornell Medical Center.	Study into choroideremia	500
Yale University School of Medicine	Treatment of artificial corneal burns with various substances related to adrenalin and its derivatives.	560
Indiana University Medical Center	Norms and techniques of corneal biostandardizations of beta-irradiation applicators for use in ophthamology.	1,596

Grant-in-aid and fellowship awards for the fiscal year 1953–54

GRANTS-IN-AID

Investigators	Institution	Amount	Project title	Lay explanation
1. Goodwin, M. Breinin, M. D.	New York University, Post-Graduate Medical School.	$1,620	Neotetrazolium studies in the eye (dehydrogenase tracing).	Study of the physiology of the eye to determine under certain abnormal conditions problems relating to glaucoma, cataracts, and corneal transplantation.
2. Hermann M. Burian, M. D. (continuation grant).	Department of Ophthalmology, University Hospitals, Iowa City, Iowa.	3,000	Continued studies in electroretinography.	Study of the retinal function by means of electric responses in relation to defective vision in children with crossed eyes and in certain diseases of the retina in children and adults.
3. T. S. Danowski, M. D., and Lawrence Greenman, M. D.	University of Pittsburgh, School of Medicine.	2,500	Studies of factors affecting the development of galactose cataracts.	The investigator plans to conduct a study into the factors which affect the development of a certain type of cataract by inducing the condition in experimental animals through diets high in galactose. These studies should help to bring information about the formation of certain types of cataracts found in infants and growing children.
4. William G. Everett, M. D.	Institute of Ophthalmology, Presbyterial Hospital Medical Center.	1,000	Mensuration of living eye by X-ray and relation of measurements to pathologic states.	Study into length and size of the human eye. This investigation may provide valuable information with regard to myopia and concerning eyeballs which develop retinal detachment. It may also provide information which may give assistance in determining the need for eyeball shortening in retinal detachment.
5. Harry Green, Ph. D., Irving H. Leopold, M. D. (continuation grant).	Wills Eye Hospital, Philadelphia, Pa.	3,000	Investigation of the intermediary reactions and the enzyme systems involved in lens metabolism.	A continued study into the metabolism of the lens to further clarify method of lens development and cataract formation.
6. Arlington C. Krause, M. D.	Division of Ophthalmology, University of Chicago.	950	Toxoplasma in domestic animals.	Study into a widespread parasitic disease in domestic animals. This disease called toxoplasmosis can be transmitted from mother to unborn child. This study may provide the answer to how parents acquire this type of infection which can produce encephalitis as well as destructive processes involving the retina.
7. I. C. Michaelson, M. D. (continuation grant).	Government Hospital, Haifa, Israel.	3,000	Factors affecting new vessel growth, particularly in the cornea.	This study is concerned with determining more effective techniques in preventing and healing of scars in the cornea of the eye.
8. J. Wm. Rosenthal, M. D.	Tulane University Medical School.	400	A genetic study of the spherophakia, glaucoma, brachydactylysyndrome.	A study concerned with the hereditary factors in certain eye diseases, such as abnormality of the lens, glaucoma and other congenital abnormalities.
9. Necdet Sezer, M. D.	Cerrahpasa Hospital, Istanbul, Turkey.	2,000	Characterization of the virus of Behcet's disease.	This investigation is being conducted by a famous Turkish eye specialist and is concerned with a study of a virus which produces a serious blinding eye disease in which the major problem is a uveitis of both eyes. This is a disease which also produces disturbances of the urinary genital system. This project may prove to be one of the most important contributions in virology.

Grant-in-aid and fellowship awards for the fiscal year 1953–54—Continued

Investigators	Institution	Amount	Project title	Lay explanation
10. Fred M. Wilson, M. D., (combination grant).	Indiana University Medical Center.	1,500	Experimental study of effects of beta irradiation.	Study to improve the safety of X-ray treatment of the eye.
11. Jerome J. Wolken, Ph. D	Eye and Ear Hospital, Pittsburgh, Pa.	[1] 3,600	Fine structure of photoreceptors	Study into certain structures of the human eye, particularly the rods and cones, the cells which have to do with vision in the retina. Investigator also plans to study certain photo sensitive structures in lower organisms and plant cells which are capable of changing light energy to chemical energy and nerve impulses. This may shed light on understanding the function of vision and its retinal diseases.
12. Max Fine, M. D	Stanford University, School of Medicine, San Francisco, Calif.	2,500	Inhibiting effect in serum of patients with sarcoidosis (ocular and other) upon the hemoagglutination test for tuberculosis and other agglutination reactions.	The blood serum reaction in patients with sarcoidosis upon certain blood serum reaction for tuberculosis and other conditions.

[1] This award includes graduate student fellowship stipend.

FELLOWSHIPS

Fellow	Institution	Amount	Project title	Lay explanation
1. Edgar Auerbach, M. D.[1]	University Hospitals, State University of Iowa.	$4,200	Retinal physiology	Study into the function of the retina by means of electrical investigation in order to provide further knowledge and information concerning normal and abnormal conditions of the retina.
2. Torvard Laurent, M. D	Retina Foundation, Massachusetts Eye and Ear Infirmary, Boston.	3,000	Influence of ascorbic acid on the shape and size of the hyaluronic acid molecule in the presence of different inorganic ions and at different hydrogen ion concentration.	Study as to the influence of Vitamin C in the vitreous of the human eye. Changes in the vitreous are associated with such processes as aging, detachment of the retina and other disease conditions which destroy sight in humans.
3. Stanley Jerold Solomon	Eye and Ear Hospital, Pittsburgh, Pa.	2,400	For subject see p. 4, item 11, J. J. Wolken. Amount of this stipend included in $3,600 total.	

[1] This fellow is being financed by the Michael Tenzer Memorial Fund of the National Council To Combat Blindness.

The CHAIRMAN. We thank you. Dr. Gordon, I feel terribly embarrassed.

Miss WEISENFELD. Dr. Gordon has asked me to include in the record his statement.

The CHAIRMAN. It will be included in the record at this point.

(The statement referred to is as follows:)

STATEMENT OF DAN M. GORDON, M. D., NEW YORK

QUALIFICATIONS

Graduate of the School of Medicine, University of Michigan, 1932.
Diplomate of the American College of Ophthalmology.
Fellow of the American College of Surgeons.
Fellow of the American Academy of Ophthalmology and Oto-Laryngology.
Fellow of Pan-American Ophthalomological Society.
Assistant Professor of Clinical Surgery (Ophthalmology) Cornell.
University Medical College.
Assistant, attending staff, New York Hospital.
Chairman of the medical board of the National Council to Combat Blindness.
Member of the American Medical Association and New York State and New York County Medical Societies.
Fellow of the American Medical Association.
Consultant to the Council on Pharmacy, American Medical Association.
A pioneer in the introduction of ACTH and cortisone into ophthalmology.
Authority on night-blinding diseases.
Member of the National Advisory Institute of Neurological Diseases and Blindness Council.
Author of various ophthalmological articles.
Special consultant in ophthalmology to the Surgeon General United States Public Health Service.

The organization of the average medical school eye department in this country has not been conducive to the conduction of a good eye research program, until recently. Since ophthalmology is primarily a clinical subject, most eye departments are headed by part-time clinicians, who (for the most part) are too busy with their private practices to devote much time to their departments or to research programs. Those who are and were desirous of carrying out intensive research projects on a large scale involving ophthalmologists, chemists, physicists and other allied technical skills were (and are) stymied by lack of funds. Most departments still lack adequate funds with which to carry out their necessary teaching programs; and depend upon part-time men who devote their time free. Postgraduate programs are virtually nonexistent in most medical school eye departments excepting for the training of their own immediate house staffs (interns and residents).

During the last decade or so there has been a gradual change in the organizational policies of many medical schools in the direction of building up the so-called minor specialties (eye, ear, nose and throat, dermatology, neurology, etc.) into major departments.

This has involved the gradual replacement (where funds could be found) of part time heads, etc., by full time men and the addition of other full time men; with the concommitant stimulation of subspecialization within the field of ophthalmology. This latter has meant that many well trained men are now devoting themselves to the study of various problems within the broad field of ophthalmology (such as diseases of one part of the eye, the various diseases involving the eye and the brain together, etc.) Since problems and fields tend to overlap this intense concentration on, what appear to be, very small areas within a broad field has actually meant that as one problem is solved, a key has automatically been furnished which may open the door to the solution of a related problem.

As a matter of fact there has been an awakening consciousness of the fact that the eye is part of the whole body and is involved in the ilnesses of the latter. A good example of this is diabetes, a general disease which is high in the list of causes of blindness. One of your own Members of Congress is blind as a result of diabetes. Another example is that the hormones ACTH and cortisone which were brought out for the relief of arthritis have proved more valuable in the treatment of certain blinding eye diseases. It is to the eternal credit of

Congress that the first funds which facilitated this great research program in all phases of medicine were appropriated by your body.

It is no secret that the medical schools have been hamstrung by lack of funds; and that this dearth has inevitably handicapped the smaller departments more than the larger ones. Since the eye departments are usually the smaller ones (numerically) in each medical school, they have suffered bitterly on this score. In many medical schools the eye department is a part of surgery, and dependent upon that department for funds for its very life. Since the surgical department never has sufficient funds for its own ends, it follows that the eye department suffers the consequences of that poverty. Since practically all research in the field of blindness is done in medical schools, it follows that the flames of progress depend upon outside funds for fuel. The amount of such moneys has been virtually negligible until the creation of the Institute of Neurological Diseases and Blindness. The speaker has had the privilege of being on the first council of that institute.

The impact of this institute on the eye profession has been a deep one. Many eye departments which formerly have gone begging for funds and which have had difficulty in holding their staffs together (for want of funds with which to pay salaries, etc.) have suddenly sprung into full bloom as a result of this aid. The Retina Foundation in Boston is one of these. Western Reserve is another which has been built up by such funds. The University of Indiana is another. In fact many of the top eye departments in this country owe their high positions and excellent research programs to the funds supplied by this country. If that aid was suddenly withdrawn the wheels of eye research in this country would come to an almost virtual standstill in many institutions. The bulk of the present day work on inflammatory eye diseases which has saved so many thousands from blindness has been done by men financed by the institute. The brilliant work and new advances in retinal detachment surgery has received much of its financial support from Government funds. The beautiful work done at Manhattan Eye and Ear Hospital in the elucidation of certain previously unknown facts about the retina was done on your funds; as was the equally brilliant work at Western Reserve University on the electrical responses of the eye. The only important work on a new diagnostic tool, the pupilography camera, is being carried out with institute funds at Columbia University. I could similarly point out example after example of invaluable discoveries made solely because a far-seeing Congress has made funds available—limited though these may have been.

The investigation of eye disease is but a phase in a much broader problem. Once important discoveries have been made, these must become available to the afflicted public. It requires about 5 years for new treatments to percolate down through the masses. Methods of postgraduate education must be extended, provided, and stimulated. New teaching mechanisms must be devised for the more rapid dissemination of knowledge. Teachers must be trained in increasing numbers. The research director of one large institution has told me that I would be amazed at the number of men who still do not know how to use antibiotics (penicillin, etc.) properly. At the present time it does not pay a man to stay in a medical school as a teacher; the salary rarely is sufficient to feed and rear a family.

If one takes into consideration the many thousands necessary to finance the rehabilitation of one blind person and multiplies that by the number of people saved from blindness only at those institutions which carried out their research programs on inflammatory eye diseases with Government funds—the amount of money saved this and future governments in welfare funds and income-tax exemptions would finance the institute for years to come.

Gentlemen, this is a program which is beyond the scope and ability of any private agency in the field. Only an organization such as the institute could correlate the research programs of all of the medical schools and command their respect and support. Actually, most private agencies are, by necessity, limited almost entirely to educational and rehabilitative work. Only the Government is capable of financing, coordinating, and facilitating the broad research programs necessary to save many thousands of people from preventable blindness.

It is one of the ironic tragedies of life that the more that medical science has done (and will do) to prolong life (at either end of the scale) the greater and more manifold become the other problems which arise out of that very longevity. The steps toward adding years have meant the addition of the problems of the aging eye to the other unsolved problems facing the eye man. Cataracts, glaucoma, diseases of the blood vessels and of the retina plague the population in

increasing amounts. Some 2 million diabetics are ever with us, living longer because of the various insulins and new diabetic treatments—and living to face inevitable blindness. There are hundreds of thousands of people facing various hereditary eye diseases; not one of which has been solved as yet. The thousands of premature infants saved by new scientific techniques have only served to add to the number of the blind. This problem of the infant blinded by the disease of prematurity (retrolental fibroplasia) seems now to be on the verge of solution as a result of a great concerted research program conducted in unity by many of our outstanding eye departments with money supplied by the Government, by some of the private agencies represented here today and by wealthy members of afflicted families. If the solution to this horrible disease is finally solved it will be only because of research; expensive research. Yet the prevention of further blindness by this disease will do nothing to ameliorate the condition of those already blinded by it, and now in need of rehabilitation for the rest of their lives.

I could go on in this vein at great length. That, however, is needless. The problem of blindness is a great one. It threatens all of us and all of our homes. It is not a dramatic problem—there is nothing dramatic in being blind. One's sufferings are not visible to the general public. It simply removes thousands of people from the normal course of life, from the production lines; and places an uncounted emotional and financial burden upon their families and local and national governments. Every dollar spent to prevent eye disease and blindness via eye research and the training of the necessary personnel means the potential saving of thousands of dollars of public funds. The $25,000 of Government funds which my own school (Cornell) spent on its research into the treatment of inflammatory eye diseases has already, in less than 4 years, saved hundreds of eyes from blindness. Has that been a worthwhile project for this Government?

Thank you.

Mr. WALKER. We have some pamphlets that we would like to hand to the clerk to supplement Miss Gruber's testimony, and if you see fit to use them in the printed record, that will be fine. We would like to have each Congressman on the committee have copies of them. We have them here for the clerk.

The CHAIRMAN. We will be glad to have them. I will have the staff examine them, and if it is possible, they will be made a part of the record.

Mr. SCHLOSS. We have a resolution that was adopted by the Blinded Veterans Association at its last convention in Philadelphia, and it expresses the view of the members of the Blinded Veterans Association with respect to the need for more adequate research, and encourages greater financial aid for such research. I would appreciate it if we were permitted to insert it in the record.

(The material referred to follows:)

RESOLUTION ON RESEARCH INTO THE BLINDING EYE DISEASES, BLINDED VETERANS ASSOCIATION, EIGHTH ANNUAL CONVENTION

Whereas very little consideration has heretofore been given to finding the causes and cures and to preventing blindness through research; and

Whereas medical authorities advise that the causes and cures of many blinding eye diseases are unknown; and

Whereas this matter was called to the attention of the Congress of the United States, which responded by enactment of Public Law 692 (81st Cong.) creating the National Institute of Neurological Diseases and Blindness under the United States Public Health Service; and

Whereas support in part is now being given by the Government to research in the field of neurological diseases; and

Whereas it is important that there be a general program of education in order that the public may be advised as to the need for research in the blinding eye diseases, so that financial support may be provided by individuals and organizations in addition to that provided by the Federal Government; Be it therefore

Resolved, That it is the sense of the members of the Blinded Veterans Associa-

tion assembled at their eighth annual convention in the city of Philadelphia on August 22, 1953, that all proper measures be taken to the end that people may be educated to the need for support of research in this long-neglected field, and that individuals, organizations, and the Government be encouraged to give financial aid to research in the blinding eye diseases.

The CHAIRMAN. You may put anything else in the record in support of it.

Dr. BAILEY. Out of courtesy to the witnesses coming on, I would just like to make this statement, that this testimony illustrates the large scope of responsibility for a national program in research in neurological diseases and blindness and that blindness is one of the No. 1 items of our interest. We hope eventually to develop a program that will be worthwhile to the Nation, and we feel competent to do so.

We have with us Dr. Stone and Dr. Hart who could testify in regard to the program details; however, much of this material is conained within the statement made by the Institute and is already submitted.

Now, in view of the shortage of time, I would suggest that the record stand as it is. We are available for further questioning.

The CHAIRMAN. I have it in mind that you people are located here in Washington and we can call you at another time without as much inconvenience as it would be if you were a resident at some distant point. So far as additional information is concerned, we will be very glad to make that a part of the record. You have already made a very complete statement, as I understand it, which is a part of the record, and if the statements that Dr. Stone and Dr. Hart have prepared and you desire to have them made a part of the record, they will also be made a part of the record.

Dr. JOHNSON. Dr. Stone, do you and Dr. Hart concur?

Dr. STONE. Yes. Our statements have already been submitted.

Dr. JOHNSON. I would like to make just one closing comment, and that is, as professor of ophthalmology and as a practicing ophthalmologist—and I believe I speak for the societies that represent the blind—our confidence must remain in Congress to appropriate adequate sums, and we certainly have the utmost confidence in our Institute of Neurological Diseases and Blindness to administer these funds properly. I only hope that in the future some budget base other than that judged by past experience will be used in making up the budget, because if we are to remain on a budget base of $400,000 it is impossible for us to ever achieve any progress toward the prevention of blindness.

May I make an exception to the previous budget base? I thank you for the privilege of being able to attend.

The CHAIRMAN. We are very appreciative of the leadership you have given us in this discussion, and we thank those who have been present and submitted their contributions to the committee. You have all been very helpful to us in our endeavor to do the thing that will be most helpful in the future. Unfortunately, we may not be able to do all we would like to do when it comes to appropriations, though so far as the need of them is concerned, though, no argument is necessary as far as we are concerned. We will be glad to be helpful in any way we can. We thank you very much.

Dr. FOOTE. I have some pamphlets and data that I would like to submit for the record. You may determine whether it should be printed.

The CHAIRMAN. Thank you.

Dr. JOHNSON. I want to thank you very much.

(The following statements by J. M. Ulmer and by the National Society for Crippled Children and Adults were received by the committee for in corporation in the record:)

STATEMENT OF J. M. ULMER, CLEVELAND, OHIO, ON THE CAUSES AND CONTROL OF SOME OF THE PRINCIPAL DISEASES OF MANKIND, INCLUDING NEUROLOGICAL AND SENSORY DISEASES

Mr. Chairman and members of the committee, my name is J. M. Ulmer. My address is 1130 B. F. Keith Building, Cleveland, Ohio, where I practice law. For more than 5 years, as a layman, and at my own expense (and because for nearly 2 years my vision was impaired to the point that I could not read a line) I have devoted myself to helping bring about research in the blinding eye, otological and neurological diseases field. These diseases, interrelated as they are, affect a great segment of the population and constitute an extremely serious public-health problem.

I have just completed 3 years of Public Health Service as a member of the Surgeon General's Advisory Council of the Neurological Diseases and Blindness Institute. I am secretary of the National Foundation for Eye Research, which has for its only purpose the advancement of the cause of research in the blinding-eye-diseases field. I make this statement as an individual and not in behalf of the foundation, as I have not, because of the shortness of time, had the opportunity of clearing this presentation with the members of the board of the foundation.

Your chairman has said "The committee is keenly conscious of its legislative responsibilities in the field of health and that it is appropriate to inquire just where we are, where we are going, and what additional measures must be taken in the way of research which will hasten relief from dreadful diseases." This statement is intended to supply some of the answers to these questions. No field of human endeavor offers more in the way of possibilities for human betterment than that of medical research. All disorders of the nervous system are referable to a single organ, the brain, or its important appendages—the spinal cord, and nerves and the sensory receptors, which provide us with the power of vision and hearing. Neurological and sensory disorders constitute a major and extremely serious public-health problem of the United States, affecting many millions of people, who endure gravely disabling conditions. No other group of disorders causes such permanent crippling and severe psychological, social, and economic dislocation to the individual sufferer. These diseases are the third greatest cause of death and probably the leading cause of permanent disability. No other group receives so little medical and research attention and yet no other major group of disorders represents such an economic loss to the Nation.

Exhibit 1, attached hereto, indicates in detail the numbers of our population affected by the major crippling neurological and sensory disorders.

As to the first question presented by your chairman, it is agreed that since the creation under the Public Health Service of the Neurological Diseases and Blindness Institute 3 short years ago some progress has resulted, notwithstanding the fact that only a token appropriation was made by the Congress to this institute which was available for research, as reflected by the following figures:

1951	$342,000
1952	1,015,000
1953	965,000

It must be apparent that the neurological and sensory diseases not only create untold suffering but are a great economic burden to the Nation in terms of loss of manpower, cost of medical care, and rehabilitation, and otherwise, and certainly in the terms of the financial load which a single case of the disease imposes on the individual sufferer or his family.

The question the committee poses is answered by relating the facts which (out of my own personal experience and that of others likewise interested) amply demonstrate the enormity of the problem and the smallness of the appropriations from the Congress to meet the same. It is crystal clear that progress through research will find the answers unknown to science only if funds are provided to those who seek through research the causes of these diseases afflicting the brain and, through it, the nervous system, the eyes, speech, and hearing.

One more statement may give your committee a part of the answer to the question, "Where are we at?" Consider that in 1953 to meet the problem of deafness which affects over 4 million persons, including about 700,000 who are totally deaf, there was allocated through Public Health Service for otologic research the meager sum of $50,288. What else need be said?

Organizations interested in this field of diseases try to encourage public education and thus gain financial support to advance programs of research and rehabilitation in these fields. The leadership in this endeavor must come from the Public Health Service. If the Congress is informed as to these matters and supports the Public Health Service, various groups interested in the several branches of the diseases closest to them will do their utmost to help find additional funds and thus supplement the moneys appropriated by the Congress to meet this situation. What each organization provides in dollars is a matter of statistics which will be furnished by others.

In 1950, under Public Law 692, the Congress created the Neurological Diseases and Blindness Institute. Since that time research in these fields has made some little progress. It is agreed, however, that there have been very little authentic advances in the neurological and sensory diseases field for the very simple reasons that research is a slow process and that funds have been lacking. Medical science having just commenced to advance the cause of research and having barely scratched the surface, has a long, long way to go. (Reference is made to statements on this subject contained in the exhibits hereto attached.) It must be clear for these reasons that very little advance can be made in ophthalmologic research when in 1953 out of the small total appropriation by the Congress for the entire institute only $350,000 was available for research in this field. And the same situation exists in the neurological diseases research sector, which had an allocation of about $700,000 in 1953 for the purpose of research. This is but token money for research in so important a field. I ask each member of this committee, "How far do you believe researchers can advance in otological diseases with an allocation such as was made in 1953 of only $50,288?" What shall we say, what can we say, to justify such a situation when we consider that only through the provision of adequate funds may we commence to educate the researchers and establish the places in which they can work and then look to progress through research in neurological and sensory diseases fields?

Support must be provided so that the Clinical Center for Research in Medicine and Public Health at Bethesda may be fully utilized in the interests of the public health of the Nation.

In the September 1953 issue of the Public Health Reports, volume 68, No. 9, at page 897, you will find a short factual description of the greatest clinical and research center ever conceived by man in the interests of public health, its plan, and its purpose. This center, research laboratories, and researchers everywhere, if adequately supported, will help solve the problems here discussed.

Others coming before your committee will answer the question of what advances in research have been made through the support of organizations represented by the witnesses who are testifying to this committee. As research goes forward, more and more public support will follow. This is the record of other research efforts in comparable diseases.

You ask, "What appear to be the major unknowns which must be discovered before the diseases can be controlled?" and, "Are funds, facilities, and manpower available for the next stages of research?" Most of the unknowns, the causes of these diseases, which are unknown to science, can only be discovered through research before the diseases can be controlled. We must look for the cause; the cure, and prevention then follow. The Congress should appropriate the funds for this purpose; the public will do its part and help. The men who will ultimately help find the answers through research must through proper education be given adequate support, and be fairly paid so that they will stay in the laboratories and continue in that unending search which must be made to find the unknown factors that cause the diseases afflicting the people.

Having finished my 3-year term on the advisory council of the Neurological Diseases and Blindness Institute under Public Health Service, I can truthfully say that never in my experience have I worked with a group of men and women of such high purpose, deep sincerity, and outstanding ability as the staff of the Institute. In the accumulated experience and knowledge of the personnel in the seven National Institutes of Health, from Surgeon General Scheele down there has been built a great and able force who can and will, if adequately supported, carry forward and enlarge the programs of research and rehabilitation

in the diseases of mankind. The gateway to public health is through research which has been so ably advanced by the seven Public Health Service Institutes, notwithstanding the inadequate financial support that has been thus far provided.

I must stress the subject of rehabilitation, the rebuilding of the victims of illness, until recently the handicapped, the forgotten, and neglected man. Rehabilitation is "the restoration of the handicapped to the fullest physical, mental, social, vocational, and economic usefulness of which they are capable." I call your attention to the article on rehabilitation which you will find on page 55, volume 1 of America's Health Status, Needs, and Resources. I also direct your attention in your search for the answers to the questions before you, to the discussion on research which is to be found on page 234 of volume 2, of the same publication, which reads in part:

"The public is insufficiently aware of the results and economies which medical research is contributing to the welfare of the Nation. * * * Funds as now available from all sources are still grossly inadequate * * *."

I urge each member of this committee to examine the references here alluded to. There is no need in this short presentation to summarize the conclusions found therein, the reading of which will truly enlighten anyone who wants to know the facts.

You cannot build on a solid foundation with continuity of operation in the field of research or rehabilitation, unless it is tied in closely with the mainstream of medical education, which must be supported and expanded. Research funds should be allocated on a long-term basis, either to institutions or to individual scientists pursuing research.

Much valuable information can be furnished this committee by seeking the testimony of some of the men on the staff of the Institutes and others, who work with researchers and medical schools and are fully informed on the subject by reason of such close contact. There are in particular four men whose testimony is available to your committee and who are superbly qualified to assist you by bringing to your attention a wealth of information on this entire subject. I suggest that you call for testimony Dr. T. Duckett Jones, director of the Helen Hay Whitney Foundation of New York, Dr. Kenneth M. Endicott, Dr. Frederick L. Stone, and Ernest M. Allen, of the Public Health Service staff at Bethesda, who served on an intercouncil committee of 14 of the 7 Public Health Institutes (2 members from each Institute) and who recently made a coast to coast survey and study of researchers and medical schools in an effort to find some of the answers you seek.

One further thought: Not only must money be appropriated for the purpose of research and rehabilitation, but it must also be provided for more administrative funds to PHS so that research dollars may be wisely spent. This requires continued employment of sufficient competent and adequately paid personnel on the administrative staff of the Public Health Service.

In this statement I have taken the liberty of using language found in the reports hereto attached, and other published sources of information, all of which more fully and better express the thoughts I want to leave with you.

Knowledge and more knowledge, which is research, must be acquired by long-term support of broad proposals in a manner which insures freedom of thought, inquiry, and experimentation. In the health sciences, as in all other sciences, knowledge is valuable for its own sake. To this end, substantial funds must be made available for general research in order to assure the scientist that he may feel free to pursue his own intellectual curiosity irrespective of its reference to any defined need or purpose.

The hope of all of us is that research may be advanced to prevent the scourge and the economic waste that come from these dreadful diseases which afflict so many of us. I thank you for the opportunity of testifying to your committee.

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EXHIBIT 1

Major crippling chronic neurological and sensory disorders

Epilepsy	cases	1,500,000
Cerebral palsy	do	400,000
Hemiplegia	do	1,500,000
Parkinsonism	do	1,500,000
Aphasia	do	400,000
Multipjle sclerosis and other demyelinating diseases	do	300,000
Muscular dystrophy	do	100,000
Blindness [1]	do	1,700,000
Totally blind	do	260,000
Blind in 1 eye	do	1,000,000
Vision barely useful	do	340,000
Deafness (760,000 totally deaf)	do	4,560,000
Chronic meningitis	do	15,000
Chronic encephalitis	do	100,000
Chronic poliomyelitis	do	225,000
Neurosyphilis	do	120,000
Brain, spinal, and peripheral nerve tumors	cases per annum	10,000
Myasthenia gravis	cases	4,000
Accident and injury to the nervous system	do	[2] 1,000,000

[1] 19.5 percent of total affected by cataracts, 15.2 percent of total affected by keratitis, 10.5 percent of total affected by glaucoma.
[2] Approximated.

EXHIBIT 2

STATEMENT SUBMITTED BY V. EVERETT KINSEY, PH. D.

It is unnecessary with this committee to stress the worthiness of any program designed to alleviate blindness. Previous witnesses have pointed to the personal and economic losses involved in persons who are blind and whose vision is seriously defective. I will attempt to show that significant reduction in the blind population, or in the number of persons who will become blind in the future, would not be expected to result from the present effort expended on research in ophthalmology.

The number of persons who are conducting research in blinding eye diseases is small indeed. Let me illustrate with one disease, glaucoma. This is caused by excessive pressure on the optic nerve. There are approximately 30,000 persons blind from glaucoma in the United States. How many workers are presently devoting full time to research on this particular disease? A generous estimate is 3.[1] Actually, there are less than 20 full-time research workers in the whole field of ophthalmology. While there are perhaps as many as 100 practicing ophthalmologists who spend a part of their time in carrying out research, their studies are of necessity of a sporadic nature. Their investigations frequently represent clinical testing more than development of fundamental principles on which new therapy might be based. The work of these ophthalmologists is seriously handicapped by lack of laboratory facilities and consulting personnel.

The explanation for the paucity of research effort aimed at preventing blindness is primarily lack of financial support. There are in the United States only 4 or 5 laboratories (Harvard, Columbia, Johns Hopkins, the University of Iowa, and the University of California) which have sufficient funds to employ a full-time research investigator or staff in ophthalmology. Rising costs and the general tendency of private foundations to curtail grants-in-aid have reduced the personnel even in these laboratories.

The need for expanded research on blinding eye diseases is apparent. The question is, How can research in ophthalomology be expanded best? In the writer's opinion this can be accomplished by long-term grants-in-aid, first to those institutions having facilities and a past record of accomplishment in ophthalmic research, and secondly to such of her institutions which may be specially qualified for such research.

[1] The figures presented are based on a personal survey extending from coast to coast, and I believe are conservative. The details of this survey were published in Science (Fundamental Research in the Clinical Specialties), vol. 105, 373 (1947).

In a clinical specialty such as ophthalmology, it is absolutely essential, both for teaching and research purposes, that (1) research be carried out in proximity to large numbers of patients, for example in teaching hospitals and large centers of population; and (2) grants of any size be extended over a period of 5 to 10 years to attract and keep good scientific and medical personnel. The importance of tenure cannt be overemphasized. No amount of funds can insure success of research in the absence of continuity of effort.

I therefore respectfully recommend to this committee that steps be taken to provide funds for research on the causes, treatment, and cures of blinding eye diseases, in the manner outlined above.

OCTOBER 1, 1953.

The above statement is supplemented as follows:

Since writing the above, the number of research workers in ophthalmology as well as laboratory and clinical facilities designed for ophthalmic research has increased to some extent until now there are between 24 and 30 full-time research workers in the field and 2 or 3 additional laboratories and clinics. The increase has been brought about chiefly through funds provided by the National Institute for Neurological Diseases and Blindness of the United States Public Health Service.

Still the total effort made to prevent blindness is incommensurate to the needs. It seems to me imperative that the gains which have been made be preserved and that further expansion in ophthalmological research be undertaken.

Respectfully submitted.

V. EVERETT KINSEY.

STATEMENT BY LAWRENCE J. LINCK, EXECUTIVE DIRECTOR, NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.

The National Society for Crippled Children and Adults, with headquarters at 11 South La Salle Street, Chicago, is a voluntary health and welfare agency, which has been serving the crippled for 32 years. Affiliated with the national society are 52 State and Territorial societies for crippled children and adults. These societies, together with 1,300 local affiliates throughout the country, carry out a 3-point program of care and treatment, education, and research. Care and treatment services are based upon study of community needs, available resources, and the programs of other private as well as public agencies. They are directed by voluntary boards of trustees and are staffed by professional personnel. More than 800 services and facilities are owned and operated or conducted by Easter seal societies throughout the country, including diagnostic and evaluation clinics, outpatient treatment training centers, rehabilitation centers and curative workshops, itinerant therapy programs, residential facilities such as convalescent homes, speech programs, assistance to public school treatment units, and sheltered workshops and homebound employment programs.

This statement is submitted to the Wolverton committee with the hope that the long-term nationwide experience of the national society in serving the crippled may be helpful in the committee's exploration of needs in the field of neurological diseases and blindness.

CRIPPLED PERSONS SERVED

During the year ending August 31, 1952, Easter seal societies cared for 101,000 persons, of whom 81 percent were children under the age of 21, and 19 percent were adults. These 101,000 individuals are classified under the following diagnostic categories:

Orthopedic (other than cerebral palsy)	35,000
Cerebral palsy	17,000
Speech defective	25,000
Other	24,000

Specific diagnostic conditions included in the broad category of orthopedic handicaps are residual crippling from poliomyelitis, multiple sclerosis, muscular dystrophy, arthritis, hemiplegia, paraplegia, amputations, congenital malformations, etc.

CEREBRAL PALSY

In the experience of the national society, the greatest university of need is represented by the cerebral palsied. Services required by the cerebral palsied cut across the entire field of health, welfare, and education, recreation, rehabilitation,

and employment. This is reflected in the fact that while less than 20 percent of the total caseload were classified as cerebral palsied, 50 percent of the expenditures of the Easter seal societies nationwide for care and treatment services were for the cerebral palsied. In many areas, the percentage of persons served as well as the funds expended were much higher.

TOTAL EXPENDITURES

Total expenditures during the period ending August 31, 1953, were in excess of $8 million. Approximately $4,500,000 was for direct service to the crippled; $900,000 for professional, parent, and public educational services; over $300,000 for employment services; and the remainder for research, State and community organization, fund raising, and administration. A breakdown of specific sums expended for direct service and employment is as follows:

Clinics and outpatient centers	$941,103.42
Convalescent homes and hospital schools	504,760.81
Provision of aids and appliances	156,309.67
Purchase of medical care	167,840.37
Rehabilitation centers	506,709.17
Other medical care and therapy	1,365,425.80
Social services	230,051.35
Recreation and camping services	502,787.04
Testing and counseling	96,279.86
Sheltered workshop	220,071.87
Other services	93,503.81

KINDS OF SERVICES

The National Society for Crippled Children and Adults has a responsibility to serve persons suffering from any type of crippling condition within the scope of its program, and for whom no other agency provides needed care and treatment. Therefore, in order to carry out this responsibility, the society strives to establish services and facilities which can and do meet the needs of persons with various kinds of disabilities.

Rehabilitation centers are examples of facilities which give comprehensive services to crippled persons suffering from various types of neurological conditions. Here under one roof we find a coordinating facility staffed and equipped to carry on a complete program of human adjustment from diagnosis to final employment. Since many of the medical and therapeutic techniques and the elaborate equipment used in the treatment of crippling conditions are quite similar, it is logical that the victim of cerebral palsy, poliomyelitis, multiple sclerosis, and other disorders all benefit from the services available in a rehabilitation center. It would be economically unfeasible, particularly in view of the extreme shortage of qualified professional personnel in the field of the therapies, to develop separate treatment facilities for each of the diagnostic classifications. Much of the national society's recent activity has been devoted to the extension and development of community rehabilitation centers, both because of the great need that exists for this type of service and also because of their proven effectiveness in rendering maximum service in the most efficient manner.

The rehabilitation center supplements rather than supplants the physical medicine and rehabilitation services and programs of hospitals and other agencies within the community. Centers by themselves cannot meet the entire community need for rehabilitation services, but by their existence they enhance the quality and quantity of the work performed by other rehabilitation agencies which focus on special aspects of the entire problem.

THE PROBLEM

Similarly, in considering the extent of the problem of crippling, the society is concerned with the overall picture. In view of the committee's interest in the field of neurological diseases, however, it may be particularly helpful to confine this statement to the problem of cerebral palsy with which the society has had long experience.

Incidence.—There are no complete statistical studies of surveys on the incidence and prevalence of cerebral palsy. The most scientific attempt is the recent countrywide survey of Schenectady County, N. Y., under auspices of the New York State Health Department. This study reported a prevalence of cerebral

palsy of 590 per 100,000 population. This figure is somewhat higher than that previously reported by Dr. Winthrop M. Phelps, whose formula would give an estimated prevalence of 400 per 100,000 of population. For practical purposes, one may consider the incidence of cerebral palsy to be 1 in 200 births and its prevalence to be roughly 500 per 100,000 population. Taking into account that the death rate of persons with cerebral palsy is about 15 percent, or 4 times that of other children in the first 6 years of life, one could estimate that there would be between 250,000 and 300,000 cerebral palsied persons under the age of 21 in the United States.

Although the above estimates take into account that the death rate of children with cerebral palsy in the first 5 years of life is about 15 percent or about 4 times the usual mortality rate of children without cerebral palsy, it assumes that the death rate after this age is the same for both groups. This is not likely, for many patients with moderate or severe cases of cerebral palsy succumb more readily to the infirmities associated with aging than do those in the normal population.[1]

ECONOMIC BURDEN

Costs of medical and treatment service vary depending on the extent of the care received. Some examples will serve to illustrate just how costly treatment for the crippled actually is.

Hospitalization costs for a crippled child in the Middle West may average $20 a day.

The most costly form of service is the type provided in residential centers providing comprehensive services. The average per capita cost at the Illinois Children's Hospital School is now $6,000 per year.

Average monthly cost at a cerebral palsy treatment center which offers physical therapy, occupational therapy, speech therapy, and psychological and social services may vary from $250 to $750 per child.

An acute problem and one for which no satisfactory solution has been reached is that of the family which may at great sacrifice be able to pay for needed care and treatment of a severely handicapped cerebral palsied child, but which is unable to provide for the future care of that child in the event of the death of those immediately responsible. There is a dearth of custodial homes which would provide such care over a long-term period for individuals who cannot achieve successful independent living in the community. Our experience has shown that there is an acute need for residential and custodial facilities for severely disabled adults.

LOSS OF MANPOWER

Of the 67,000 handicapped individuals rehabilitated by the Office of Vocational Rehabilitation during 1952, more than 48,000 were not employed at the time services began. Those employed were generally working at jobs which were unsafe, unsatisfactory, or temporary. Their combined earnings before rehabilitation amount to $16 million. After rehabilitation they were earning wages at the rate of $116 million a year. An estimated $10,400,000 in Federal income taxes will be paid by these persons annually. At this rate, it will take less than 3 years for these rehabilitated individuals to pay back into the Federal Treasury in income taxes alone the entire $21 million of Federal funds spent on their rehabilitation. Few investments pay such excellent dividends. Even if the costs of surgery, appliances, and other special expenses doubled, this would still represent a very high return on investment.

In testimony before a subcommittee of the Committee on Education and Labor of the House of Representatives, Mary Switzer, Director of the United States Office of Vocational Rehabilitation, stated:

"As a result of disability alone in 1952, $140 million was paid in aid to dependent children to 140,000 disabled breadwinners; $100 million in general assistance which, as you know, is paid monthly from State and local funds, to 178,000 disabled people; $92 million paid under the new category of aid to the permanently and totally disabled to about 160,000 disabled; and $63 million in payments to 98,000 blind persons under aid to the blind.

"That makes a total of nearly $400 million a year to meet the barest minimum needs of 845,000 men, women, and children, 370,000 of them dependent children. It gives us an insight into the cost of neglected physical disability."

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[1] Meyer A. Perlstein, M. D., president-elect of the American Academy for Cerebral Palsy in The Problem of Celebral Palsy Today (revised), to be published in the near future by the National Society for Crippled Children and Adults.

There are other benefits of rehabilitation besides the economic. The value of rehabilitation to these persons in terms of personal development and personal freedom is immeasurable. No one can place a value on ability to lift a spoon to feed oneself, or to walk across a room, and these are the things that rehabilitation has meant to many disabled persons. The increased ability of handicapped individuals for self-care and employment creates a beneficial effect on the morale of the individual's entire family, his community and society as a whole.

NEEDS IN PERSONNEL

We know that the total funds which we have available are inadequate to perform the job at hand. The great need for additional trained personnel to perform these needed services has also made our task a difficult one. A survey of professional personnel employed by Easter Seal Societies made in May 1953 is illustrative of the acute personnel shortage. The survey showed that these societies employ 1,310 professional workers (including 644 full-time and 666 part-time workers). The societies have also 229 unfilled professional jobs—in other words, there are vacancies equivalent to 17.5 percent of the professional force.

The societies were asked to estimate their professional personnel needs in 5 years. They anticipate needing an additional 998 persons, a net increase over May 1953 of 93.7 percent—almost a doubling of present professional personnel.

The greatest expansion is expected to be among those professional groups who directly serve the handicapped—the physical, occupational, and speech therapists, special teachers, social workers, and psychologists. Easter Seal Societies now employ 626 of these professional workers. Within 5 years, they hope to employ a total of 1,431, an increase of 128.6 percent.

In the Nation as a whole, this picture of present shortages and rapidly expanding additional needs for professional workers trained to work with the handicapped is equally true. For example, there are at present an estimated 5,000 registered physical therapists practicing, and there are 2,500 vacancies. Within 5 years, an additional 5,000 will be needed. To meet this need, a total of 8,000 must be trained (allowing for a 7 percent attrition rate). This requires an annual average of 1,600 graduates; in 1953 there were an estimated 624 graduates in physical therapy.

In the field of occupational therapy, there are about 3,600 registered therapists practicing and vacancies for 3,000 more. The current graduation rate of a little more than 600 per year cannot begin to meet present needs, much less the expanding future requirements.[2]

Some of the reasons for these shortages are as follows:

1. Inadequate scholarship funds.
2. Inadequate recruitment funds (and programs).
3. Inadequate funds of schools—resulting in lack of staff, space, and equipment.

RESEARCH

Research in the general area of neurological diseases will without question have bearing on all other crippling diseases and conditions of whatever kind. Conversely, research in the preventable factors in cerebral palsy, for example, is basic and not necessarily related to cerebral palsy per se, but rather to the entire field of medicine.

Our medical counselors advise us that research in cerebral palsy extends far beyond the field of cerebral palsy per se, and involves basic and clinical research in the whole broad field of medicine. It is concernd not only with the areas of diagnosis and therapy but also with prevention and social research. The estimate has been made that more than 10 percent of the cases of cerebral palsy now occurring might possibly be prevented by application of the knowledge we now have. In addition, there are research implications in the related fields of speech pathology, psychology, psychiatry, education, social welfare, and vocational guidance, testing, and placement. In all of these fields, further research would unquestionably yield results which ultimately would mean better lives for all of the crippled, including the cerebral-palsied, and would lift at

[2] Doing Something for the Disabled, Switzer and Rusk, 1953.

least part of the tremendous personal, social, and economic burdens now borne by the individuals, by their families, and by the public as a whole.

From the foregoing, it can be seen that the National Society for Crippled Children and Adults believes the problem of crippling in general, and crippling as a result of neurological diseases in particular, to be a tremendous one requiring all the energies of public and private agencies to meet. Additional funds and additional numbers of trained personnel are critically needed to provide and staff services and facilities which will bring to the crippled of our country all of the techniques of rehabilitation of which we now have knowledge. Similarly, there is an urgent need for vastly increased research efforts in fields where we already have reason to believe heartening results can be realized and in fields not yet explored.

Speaking as a voluntary agency whose strength lies in the local communities where direct services must be provided to reach the individuals in need of them, the national society pledges its financial support to research, to the limited extent to which it has funds available, while increasing its programs of care and treatment, and education to keep pace with research developments which we believe will be made possible through adequate appropriations for the National Institute of Neurological Diseases and Blindness.

(Whereupon the committee adjourned.)

HEALTH INQUIRY
(Mental Illness)

THURSDAY, OCTOBER 8, 1953

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D. C.

The committee met, pursuant to adjournment, at 10 a. m. in the committee room of the House Committee on Interstate and Foreign Commerce, Hon. James Dolliver (acting chairman) presiding.

Mr. DOLLIVER. The hearing will come to order. As a preliminary matter, let me state that the present occupant of the chairman's seat is not the regular chairman of this committee. Mr. Wolverton was called to his home late yesterday afternoon and will be here today during the course of the hearings. He asked me to get this hearing started in his absence.

The hearings of the Committee on Interstate and Foreign Commerce on the problems of chronic illness facing our Nation will be devoted today to mental illness and tuberculosis. We will start with a discussion of mental illness.

The committee is extremely concerned about the problem, the suffering that the diseases in this category visit upon so many of our citizens and their families, and the tremendous economic factors involved in caring for and treating the mentally ill.

More than half of all the hospital beds in this country are occupied by the mentally ill. Despite this, there are not enough mental hospital beds to accommodate all of the people who are in desperate need of treatment. When you add together the cost of caring for mental patients in long-term public mental hospitals and the money spent by the Veterans' Administration in hospitals for the mentally ill, on outpatient care, and on pensions for veterans suffering from neuropsychiatric disorders, the dollar cost is staggering—probably as much as a billion dollars or more a year.

These few figures only begin to tell the story. What we are going to try to do today is to find out about the scope of the problem of mental illness, the facilities and resources that are available for dealing with the problem, and what more needs to be done to help us meet it.

The pattern that the committee has followed in conducting these hearings has been to invite a group of people who are authorities in the field under discussion to come here and testify. The witnesses have all appeared voluntarily and have conducted what, in effect, may be described as an informal symposium. The committee wishes to thank those who have come today to discuss the problem of mental ill-

ness. I understand that Dr. S. Bernard Wortis has agreed to serve as discussion leader for the group.

An agenda has been prepared, and the discussion will follow the general outline of that agenda. However, since the purpose of this hearing is to place before the American people the maximum amount of information relating to this disease, I hope that the witnesses will bring everything they consider important to the attention of the committee, regardless of the agenda. The committee members will ask questions of the witnesses, and I hope that the witnesses, in turn, will ask questions of each other when they consider it appropriate.

I understand that a number of prepared statements have been submitted to our committee by the organizations represented here today. At this time, I would like the prepared agenda and the list of participants to be made a part of the official record of this hearing.

(The information is as follows:)

AGENDA FOR HEARING ON MENTAL ILLNESS

I. Scope of problem:
  A. Disease areas to be covered:
    1. Psychoses.
    2. Severe emotional disturbances—psychoneuroses.
    3. Personality disorders.
    4. Mental subnormality.
  B. Numbers affected.
  C. Costs:
    1. Tax money expended.
    2. Loss of income.
    3. Cost to family.
  D. Manpower losses.
  E. Effects on society:
    1. Dislocation of families.
    2. Juvenile delinquency.
    3. Addiction to alcohol and drugs.

II. Facilities and resources for dealing with the problem:
  A. Current state of knowledge in the field:
    1. What is known about epidemiology, diagnosis, causes, treatment, and rehabilitation.
    2. Research currently being conducted:
      (*a*) Areas of research.
      (*b*) Scientific disciplines involved.
      (*c*) Volume of research.
      (*d*) Organizations sponsoring research.
  B. Professional manpower available for dealing with the problem.
  C. Services available for diagnosis, treatment, and rehabilitation:
    1. Mental hospitals.
    2. Clinics and community services.
    3. Private psychiatrists.
    4. Institutions for mentally subnormal.
    5. Rehabilitation services.
    6. Dissemination of professional and scientific information.
    7. Prevention services, including public education and control work.
  D. What the Federal Government is doing:
    1. Research.
    2. Training.
    3. Technical consultation.

III. Needs to help meet the problem:
  A. More research:
    1. Types and specific examples.
    2. Manpower and facilities required.
  B. More professional manpower:
    1. Number and types needed for treatment services.
    2. Methods for obtaining required personnel.

C. Extended and improved services:
1. Institutional:
(*a*) Mental hospitals.
(*b*) Psychiatric services in general hospitals.
(*c*) Institutions for mentally subnormal.
2. More concentrated use of therapies.
3. Outpatient facilities.
4. Rehabilitation.
5. Prevention, control, and public education.

PARTICIPANTS

Dr. S. Bernard Wortis, professor of psychiatry and neurology, New York University College of Medicine.
Dr. Francis J. Braceland, psychiatrist in chief, Institute of Living, Hartford, Conn.
Charles Schlaifer, cochairman, National Mental Health Committee, New York City.
Dr. Seymour S. Kety, Associate Director in Charge of Research, National Institute of Mental Health.
Dr. Fillmore H. Sanford, American Psychological Association.
Dr. George S. Stevenson, National Association of Mental Health.
Dr. Robert H. Felix, director, National Institute of Mental Health.
Dr. Richard Willey, executive assistant, the American Psychological Association.
Dr. Daniel Blain, American Psychiatric Association.

Mr. DOLLIVER. In order for the recorder to identify the witnesses and so that they can be known to the members of the committee, I would appreciate it if they would stand and introduce themselves in turn, starting with Dr. Wortis.

When the introductions have been concluded, will you, Dr. Wortis, proceed to lead the discussion, following the general lines of the agenda or as you see fit.

Dr. WORTIS. My name is Sam Bernard Wortis. I am professor of psychiatry and neurology at the New York University College of Medicine and director of the psychiatric and neurologic services of the university hospital at the New York University Bellevue Medical Center.

I am consultant to several Federal agencies and several hospitals in the general metropolitan area of New York.

I have also served as the president of the American Board of Psychiatry, the American Neurologic Association, and several other medical and neuropsychiatric organizations in America.

I have also had the privilege of serving a 3-year term as a member of the National Advisory Mental Health Council to the Surgeon General of the United States Public Health Service.

My colleague to my left is Dr. Braceland.

Dr. BRACELAND. I am Francis J. Braceland, director of the Institute of Living, Hartford, Conn. I am a clinical professor of psychiatry at Yale University. I have been the dean of a medical school, and in wartime was chief of psychiatry for the United States Navy. I was head of psychiatry at the Mayo Clinic. I am secretary and president of the American Board of Psychiatry and Neurology.

At present I am psychiatric consultant to the Surgeon General of the Navy and of the Army and am a member of the National Advisory Committee to Selective Service which was set up by Congress, and chairman of a committee to determine the competency of mental-hospital superintendents.

My colleague on my left is Dr. Robert Felix.

Dr. FELIX. I am Robert H. Felix, director of the National Institute of Mental Health, Public Health Service, United States Department of Health, Education, and Welfare.

In addition to this I am clinical professor of psychiatry at Georgetown University and am on the faculty of the department of public health at George Washington University. I think that will be enough for me.

My colleague on my left is Dr. George S. Stevenson.

Dr. STEVENSON. I am George S. Stevenson, associated with the National Association for Mental Health. My chief responsibilities over a period of about 20 years have been as medical director.

I have been president of the American Psychiatric Association and consultant to a number of Government agencies: Selective Service, the State Department, Labor Department, Public Health Service, Children's Bureau, and Vocational Rehabilitation. I was on the original National Advisory Mental Health Council.

I am a resident of New Jersey.

Dr. SANFORD. I am Fillmore H. Sanford, a psychologist. I have spent most of my life in teaching and research at Harvard University and the University of Maryland; and, most recently, at Haverford College. I am currently executive secretary of the American Psychological Association.

Dr. KETY. I am Seymour S. Kety, associate director in charge of research of the National Institutes of Mental Health and Neurological Diseases and Blindness, which explains why it was my honor to be present at the meeting yesterday when discussions centered around neurologic diseases.

I am also professor of clinical physiology at the University of Pennsylvania. I am a physician who has specialized in full-time research in physiology.

My colleague on my left is Mr. Charles Schlaifer.

Mr. SCHLAIFER. My name is Charles Schlaifer. I am one of the reasons we are here. I am one of the laymen, patients, that all the doctors are here to talk about.

I am cochairman of the National Mental Health Committee. I have just completed a term as a member of the National Advisory Mental Health Council to the Surgeon General, United States Public Health Service.

I am on the board of governors of the Menninger Association and am on the board of directors of the National Association of Mental Health.

I am president of an advertising agency.

My colleague on my left is Dr. Daniel Blain.

Dr. BLAIN. I am Daniel Blain, the medical director of the American Psychiatric Association. At the present time I am clinical professor at Georgetown University School of Medicine. Formerly I was director of the Psychiatric and Neurology Services of the Veterans' Administration, for 2½ years immediately following the war. At present I am on the expert committee on mental health of the World Health Organization and am consultant to the Public Health Service and the Veterans' Administration.

Mr. DOLLIVER. You may proceed, Dr. Wortis.

STATEMENT OF DR. S. BERNARD WORTIS, PROFESSOR OF PSYCHIATRY AND NEUROLOGY, NEW YORK UNIVERSITY COLLEGE OF MEDICINE

Dr. WORTIS. Mr. Chairman, may I say for this group, and certainly for myself, that it is a pleasure to have the opportunity to come before this Interstate and Foreign Commerce Committee of the House of Representatives.

I should like to start this symposium, if you like, by stressing a few facts concerning the backgrounds for the problems of mental health, but before outlining our problems and needs in this field more definitely may I state that the complexion of medical care and medical practice has been undergoing considerable change in the past 25 years.

American society was first rural, then urban, and now is rapidly becoming suburban in its structure. It has only been a few years since physicians came out from behind their beards and their barbers' aprons, and not so many years since they laid aside their frock coats, their bedside manners, their toppers, and their special odoriferous wake of disinfectant. Now we move about among our fellow men unmarked and unscented.

Even though most of us look quite ordinary, certain aims have always been foremost in the minds of physicians, and these have been human conservation and the alleviation of pain and anxiety. We possess certain expert knowledge and skills that society needs; and happily in recent years our citizens and our Congress have joined medicine in these practical and unselfish aims toward human conservation and alleviation of pain and anxiety.

When we look at the task that modern society has placed in the hands of its physicians, we soon find that the scope of medicine has broadened tremendously. For thousands of years the treatment of the sick was considered the primary task of medicine, while today the scope is infinitely broader.

In addition to the general promotion of health and restoration of health, medicine now visualizes its function to include prevention and rehabilitation.

The health record shows that in 1900 the average life expectancy of the average citizen in the United States was 47 years. Today our life expectancy at birth is close to 67 years, an increased expectancy of 20 years in the past half century; whereas in the previous half century, from 1850 to 1900, there was added only 7 years to the life span.

Moreover, preventive health measures—the use of antibiotics and improvement in surgical techniques, including advances in the science of anesthesiology—have radically changed the health picture. In 50 years medicine has made conspicuous progress in dealing with a variety of diseases—bacterial, protozoal, parasitic, and toxic—diseases due to dietary deficiencies and to disturbances of glandular secretions and metabolic disorders. We have yet to attain successs with many virus diseases, new growths, chronic diseases and that most important No. 1 health problem, mental and nervous illness.

During the same 50-year period—that is, the last half century—certain things have been happening to the doctor. The vast expansion of medical science meant that no one physician could any longer encompass all we knew and medicine entered the "looseleaf age" where

knowledge is vast and changing and could no longer be bound into a single static volume. This was one of the factors that started the era of specialization in medicine.

You will remember that at the turn of the century there were individual migrations to Paris, Vienna, and Berlin, which bred our first crop of medical specialists, who returned home with broadened medical skills and a taste for better coffee and better beer. Now physicians from all over the world come here for the best medical training in all fields. The tide has turned considerably.

Medical education has taken large steps forward. The investigative attitudes and methods entered our clinical hospital services, and soon we found that the old traditional academic borders of medicine were breaking down. Today, in the modern hospital care of patients, no one can tell where the basic sciences end and where the clinical services begin. They are both essential parts of a comprehensive health program and, happily, the social scientist has joined the team as well.

Our present concern is with health and illness in their broadest dimensions. From diagnosis to cure we have come to rehabilitation, education, and prevention. Whereas the physician started as a single, self-sufficient unit, he now has changed and metamorphosed into a very complicated set of relationships. To be effective he must use the team of other physicians and the ancillary medical schools in clinical care, research, and teaching.

Now, what has all this to do with our problem of mental health today? May I give you some statistical orientation proving that mental ill health is the Nation's No. 1 health problem.

First, as has been said by our chairman, the number of mentally ill patients in the United States exceeds the number of patients suffering from any other type of illness.

Second, approximately 50 percent of all hospital beds in the United States are needed and used for this group of illnesses, and I cite the figure of 662,500 out of a total of 1,425,000 beds. The need for treatment facilities, including both hospitals and clinics, is more acute than in any other field of medicine because of this large, continuing, and enlarging patient load.

The personnel shortage of physicians in this field of medicine is acute, and greater, I believe than in any other field of medicine. We have about 8,000 qualified practicing psychiatrists and we need about 20,000. Our national average ratio of psychiatrists to patients in our State hospitals is about 1 to usually 250 patients.

The fourth point I would like to make is that the amount invested in research in mental health from all sources—Federal, State, local, and private—amounts to less than 2 cents of every dollar spent for medical research. Our Nation spends approximately $6 million a year on research in the field of mental diseases, of which the Federal Government spends approximately $4 million. Approximately a half million dollars comes from private sources and private foundations; and approximately $1½ million comes from State sources.

Fifth, mental illness is only in part related to acute social stress; and a good portion is acute illness as opposed to chronic illness.

The sixth point I would like to make is that mental ill health represents our greatest health problem in cost. As has been pointed out by our chairman today, approximately 40 percent of the total Federal

budget for health care is for mental health; and approximately from one-sixth to one-third of State budgets in our larger States is for the care of the mentally ill. My own State of New York spends approximately $120 million out of a total budget of $380 million. Massachusetts spends $16 million out of a total budget of $58 million.

Seventh, in addition to the problems of mentally ill patients in mental hospitals, conservative estimates based on incidence studies have shown that approximately 50 percent, 40 to 50 percent, of patients who are treated in general practice have psychiatric complications.

My eighth point is that we do not know the basic causes of much mental illness, even though we can recognize mental disease today and the coloring that social or cultural factors may give such mental illness.

Ninth, during the past 25 years psychiatry has concerned itself with more than the problems of the insanities. It not only concerns itself with grossly diseased conduct as seen in the psychoses—or the insanities, as commonly known—but also with the study, treatment, prevention and rehabilitation of personality maladjustments, delinquency and criminal behavior, instabilities, mental deficiencies, anxiety states and psychosomatic medical disorders. All these illnesses result from varying degrees of disturbance in either bodily structure or function, in psychological or social adjustment, or in the interpersonal relationships of human beings.

The psychiatrist, gentlemen, is a physician who studies and treats behavior disturbances which may express themselves either as physical symptoms or mental illness or both, and which range from simple maladjustments to insanity.

The 10th point I would like to make is that personality disorders were the cause of 18 percent of the draft rejections in World War II. This meant that 1 out of every 5 men examined was rejected for reasons of mental ill health.

Eleventh, our tested knowledge in psychiatry as regards prevention is very inadequate and in many spots nonexistent.

Twelfth, our programs for the evaluation of special treatment procedures are only just beyond their inception stage, and have just been developed in recent years.

The 13th item I have is that the incidence of mental ill health in our population is a matter that needs much study. Morbidity studies are not available in most of medicine. The statistics many of you hear are mortality statistics. As to morbidity statistics, gentlemen, there are not very good studies so far available to us.

The 14th point is that our knowledge of the specific causes of most very common types of mental illness that overcrowd our hospitals, such as schizophrenia, is meager and still speculative. Schizophrenia, sometimes called dementia praecox, constitutes the largest group of those patients hospitalized, and we are only beginning to learn how to get some of them well by newer methods of treatment.

Fifteen, people are living longer because of general medical skills, but we have not learned how to slow down or prevent hardening of the arteries of the brain; and, therefore, more and more of the older people are being sent to mental hospitals. The number of persons 60 years and older has increased 25 percent since 1939, but the number of patients in this age group in mental hospitals has increased 58 percent.

Nearly 34 percent of all first admissions to State mental hospitals are persons 60 years of age or over.

Sixteen, about 1 to 2 percent of our population is mentally subnormal.

The 17th point I would like to make is that our Nation's population has increased 14 percent since 1939, but there have been 17 percent more persons in mental hospitals during this period.

The 18th point is that this picture is not entirely gray or black—and I want to stress that—because today approximately 40 to 60 percent of persons suffering with schizophrenia can be helped by modern treatment methods. A generation ago a mental disease called involutional melancholia was hopeless in two-thirds of these patients, or in most instances. Today about two-thirds of these patients are discharged within a year of hospital admission.

Recent studies in a State hospital in Stockton, Calif., showed that with the use of intensive treatment of chronically ill mental patients physicians could triple the sick person's chances of recovery and discharge to useful work.

The 19th point is that the draft and Armed Forces statistics show that more than 2½ million men were lost to the Nation's Armed Forces through mental and emotional illness and defect; enough men to constitute about 177 Army Infantry divisions.

We have learned a good deal since World War II in this field, and a very great amount since World War I. For example, in Korea, where each Army had a psychiatrist, assisted by battalion surgeons, two-thirds of the breakdowns were rehabilitated and returned to duty without leaving the division. Only 4 percent needed to be returned to this country for treatment. This is a most dramatic improvement over World War II, when 8 percent were evacuated to the zone of interior; and that record was an improvement over World War I, when 15 percent were in this seriously disturbed category.

These statistics, gentlemen, are mirrored in the problems one sees in community and private practice. I am director of the Bellevue Psychiatric Division in New York City, which admits about 25,000 mentally ill people a year and is probably the most acute psychiatric service in the world. With acute active treatment there we are able to return approximately two-thirds of the patients who come to us.

The 20th point I have is that the costs of mental illness to our Nation are colossal. It is a reasonable estimate that this will run as high as several billions of dollars each year. Let us consider some of the facts. Patients in public mental hospitals cost $467 million in 1951. This increased to $568 million in 1952, an increase of over $100 million. The cost of mentally ill in veterans' hospitals was $126½ million in 1951. This increased to $146½ million in 1952. If we add to this the costs of treatment of veterans in psychiatric out-patient departments, the compensation for these service-connected disabilities, and pensions for non-service-connected disabilities of a neuropsychiatric nature, all these items I have listed above cost the American people close to $1 billion in 1951—$959 million—and this increased to $1,041,000,000 in 1952.

Might I point out to you that these staggering figures do not include the costs for psychopathic hospitals, the cost for private mental hospitals, treatment in mental hygiene clinics that are not part of the Veterans' Administration system, nor do they include the larger

and immeasurable cost of economic loss in earning power and the income tax thereon that would be available to the Government and to our Nation of the mentally ill individual and his family.

Now, other speakers to follow me will tell us how funds available under the National Mental Health Act have helped with some of these problems by, first, the training of skilled medical and ancillary personnel; second, the beginnings of a skeleton community service program in the States, which was spark-plugged by Federal funds; and, third, the beginnings of a research program. Federal funds have made possible some real improvements in these areas, for in the past 5 years the Federal program has provided funds for the training of some 2,200 or 2,300 professional personnel in the field of mental health as psychiatrists, clinical psychologists, psychiatric nurses and psychiatric social workers. Most encouraging is the pertinent fact that nearly 70 percent of these have entered public service.

Federal funds available under the Mental Health Act have significantly improved the teaching of psychiatry in undergraduate medical curricula throughout the country. It is worthy of note that approximately 5,000 trainees in psychiatric social work, 2,300 trainees in clinical psychology, 500 psychiatric graduate nurses, and 1,200 undergraduate nurses have benefited in their training programs through the National Institute of Mental Health.

Some of our discussion this morning, I am sure, will focus on what are some of the needs. Before I close and pass on to some of the other members of our mission here this morning who have prepared statements I would like to point up four needs, gentlemen.

We need to improve our State hospitals. They are improving too slowly, and unfortunately many are still "snake pits" and the shame of the States. Here the pressing need is for more trained personnel and more staff. We need at least twice or 2½ times the number of psychiatrists. We need about 4 times the present number of graduate nurses trained in this field. We need about 8 times the number of occupational therapists. We need about 5 times as many Ph.D.'s in clinical psychology as are now in the State mental hospitals. That is mentioning only a few of the staff needs.

Another category of urgently needed personnel in mental hospitals are what are called the psychiatric aides or attendants. Better schools and more adequate training standards must be established for this very essential group of workers in this field.

Secondly, we need more community-service clinics, guidance centers, and psychiatric services in local general hospitals. Here the need is very urgent, and the justification is real and the investment is more than practical, for in the earliest recognition and treatment of mental ill health we have the best method of preventing serious and chronic mental illness with its associated drain, both economic and personal.

Third, I would say we must develop the field of preventive psychiatry. This is no easy job, for here we need much tested knowledge; and our greatest bottleneck is again in trained personnel.

Fourth, I would say we urgently need more research workers and more research facilities. More Federal aid must be authorized for the construction of such facilities and for the training and long-term support of skilled and gifted persons who will make a career of this essential work.

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Now, with these opening remarks I would ask my colleague, Dr. Braceland, if he would have a word to say that might be of help to this group concerning some of the problems of the etiology, the causes of mental illness.

STATEMENT OF DR. FRANCIS J. BRACELAND, PSYCHIATRIST IN CHIEF, INSTITUTE OF LIVING, HARTFORD, CONN.

Dr. BRACELAND. Thank you, Dr. Wortis.

The CHAIRMAN. Doctor, we would be pleased to hear from you.

Dr. BRACELAND. Mr. Chairman and gentlemen, before starting I would like to say it is a privilege to come here. My last appearance before a committee constituted to deal with such things was before Mr. Priest's committee following the war, when we were all in uniform and all very much distressed about what we had found and what we had been through, and fearful of what it portended. Due to the understanding and assistance and help through the grant of public funds and public and private interest, the picture is very much better.

When we entered the war, when we came into the Navy from civilian life, we had fewer than 20 psychiatrists in the United States Navy. Fortunately, we were able to end up with 690 in various stages of preparation. We saw that we could not draw too much from the populace, so we started out to make some of our own.

We brought some of our problems before the committee and we received a great deal of help, and it was a privilege to have been part of that.

The picture, as Dr. Wortis points out, and as I sometimes fear, might look too vast to a committee. It might look like it is so broad and so overwhelming that people are liable to say, "Well, we cannot do anything about this," and put it aside. But that is not so, when one considers that not so many years ago there were no private practitioners of psychiatry in the United States.

We deal with the oldest disease known to man, yet we are one of the youngest specialities. There are evidences of mental illness as far as recorded history.

The CHAIRMAN. Doctor, you say it is one of the oldest diseases?

Dr. BRACELAND. Yes, sir.

The CHAIRMAN. We have had that statement made to us about several diseases. Some of the witnesses endeavored to demonstrate it by the fact that diseases were found among the mummies of Egypt. I just mention that.

Dr. BRACELAND. We could not tell very much about the mummies, Mr. Chairman, but we do appear in the Scriptures and back in recorded history of the Peloponnesian Wars.

The experts who appeared before the committee this week, all of our colleagues, who are all very fine, were talking about diseases. It is our function to talk about the people who have diseases, so we might cross a few lines unintentionally.

This whole problem has been one which has frightened people because they do not know about it. They are afraid. There is nothing mystifying about the mumps or about a broken leg, but there is something mystifying about mental disease. When people are afraid they either neglect it or they fight something.

Now, to get to the point of what has been done and what can be done in the epidemiology of these diseases—that is, in their distribution in the population—the past 20 years has seen a change, as Dr. Wortis pointed out, in the admissions to mental hospitals.

When some of us started in mental hospitals the largest number of admissions were young people with a disease called schizophrenia. There are over 100,000 people admitted for the first time to State mental hospitals in a year, of which about 25,000 have schizophrenia. However, the senile and arteriosclerotic now constitute about 27 percent of first admissions.

There is not too much use—and this is with full knowledge of the humanitarian aspects of the problem—saving us from some chronic diseases—to have an inglorious end in a mental hospital with arteriosclerosis or senility. Therefore, that is a very important factor. It is a very important problem from all aspects, because the culture has changed. We are now an urban population. There is no longer the room for the older people on the farms, and in a two-room apartment it is very difficult for a man and his family to keep an aged parent. This is helping to add to our problems very seriously.

It is interesting to note that one study in Chicago showed that the admission rates for mental disorders showed that high rates were to be found in the densely populated areas, in Chicago around the central business district, and that the rates declined toward the periphery of the city. This was particularly true of this disease called schizophrenia; while the manic depressives, which probably have a hereditary background, among other things, showed a scatter throughout the city.

Now, also people who resided in areas which are not populated by their own ethnic groups showed a higher population or a higher rate numerically for mental disease. Of course, the major problem in interpretation of these findings is whether or not people with these difficulties gravitate to certain areas or whether certain areas produce people with mental disease. It is more probably the first.

Mr. HESELTON. Probably what?

Dr. BRACELAND. More probably the first; that it is due to this great crowding.

Some of these diseases which used to bother us very much have disappeared as a serious problem. Now, it is difficult to find a case of pellagra. I think there was one reported last year. Paresis, which used to fill the mental hospitals, a disease due to syphilis of the central nervous system, is now difficult to find. It is difficult to get a case to show to medical students, to show what they are like.

Twenty years ago, involuntary melancholia, a disease affecting women in middle life was a great problem. Incidentally, men in middle life have problems, also, although they are not quite as dramatic. Then it was known that two-thirds of those people had hopeless prognoses. Now the recovery rate, due to new forms of treatment and due to a different concept, is well up to 70 percent.

That is a particularly distressing disease. It is one which used to disturb the young physicians most. As you took the wife of a man from him at a mental hospital door in good nutrition, you knew in your own mind's eye that within a period of 8 months one would hardly recognize her. It was a distressing, depressing, unsettling

type of thing to deal with. That has been helped immeasurably. It has also been helped in the way that all of these things are going to be helped; by a combination of public and private collaboration and cooperation and the use of funds in research and in teaching and in the use, also, of the private clinics and the clinics for the public in the various cities.

There are various refinements made now in diagnosis which have come out of the laboratory, and there are various things which we have learned from the psychologists, from the sociologists in this cooperative effort, because man does not exist in a vacuum and he does not get mental disease in a vacuum. He gets it in the milieu in which he lives and in which he conducts his business.

The treatment and the rehabilitation is vastly improved. Now, we know we have to learn the hard way many things which were learned before; that idleness is a demoralizing influence. Now people in mental hospitals are encouraged, as a therapeutic measure, to work and to carry on various activities in addition to their treatment. Therefore, as a result of it the rehabilitation of the mentally ill, formerly not attempted, is now attempted very seriously and it is bearing fruit and bearing results.

This is not a gray picture or a black one. We need a great deal of public education. We need help and understanding.

The unfortunate thing is that, in the States, an effort is made spasmodically and then it is forgotten. When a cut has to be made in budgets, which we all know is essential, I fear that perhaps the mentally ill, who are the great silent people, are cut pretty heavily. This results in a cost in mental hospitals which in many places is below $2 a day for the care of mental patients; whereas in city hospitals it is around $16, and in private hospitals it is around $20, roughly. Therefore, you can see the type of care which might be given to these patients.

Dr. WORTIS. Might I interrupt you a second, Mr. Braceland?

I think Dr. Braceland has given you a figure of costs which indicates how costly this problem is. I think it might also be worth pointing out to you gentlemen that we are in a period now when there is a good deal of purchase of health insurance, if you like. I think you might all realize that health insurance programs as they exist today do not cover the cost of mental illness. No one of them does.

The reason this has never occurred is because it is just too costly for them to take a risk. This, therefore, falls on the family or the community or the country at large.

I think we have not stressed enough the fact that hospital insurance plans, health insurance plans, do not cover mental illness.

Excuse me, Dr. Braceland.

The CHAIRMAN. I would like to say for your information, Doctor, that it is the intention of this committee, when it has finished its study of diseases, to immediately take up the question of insurance, covering the diseases particularly of long duration. It would seem, from what little we do know about it at the moment, that there are plans of group insurance and otherwise to take care of the short or temporary illness, but for those of long duration there seems to be a little inconsistency. It is in that field that the average family is greatly in need.

Immediately following these hearings, commencing, I think, about the 15th of this month, we intend to make a further study of that whole

field and to ascertain if in some way there can be some plan devised by which help can be extended to that great number of indivduals who are not poor and being taken care of because of their poverty and who are not taken care of because of their wealth, but the large number in between those two classes. It is with particular reference to that that this committee will make a study before it has concluded these hearings.

Dr. BRACELAND. Mr. Chairman, with just one statement, which I think Dr. Wortis mentioned, I would like to close, and that is that in the First World War the loss due to these mentally and emotionally diseased immediately returned from action was 15 percent; in the Second World War it was 8 percent; and now it is 4 percent. The excellent work which was done in Korea, where the men were treated up front, treated quickly and rehabilitated while they were still in the service, resulted in saving an untold amount of expense in addition to the most important factor, the humanitarian aspects of the problem, saving individuals for worthwhile lives in the future. I am sure that much of that good work was due to the fact that committees like your own, in conjunction with private organizations interested, encouraged and helped and trained some of these psychiatrists who took care of some of these patients.

I appreciate your indulgence.

The CHAIRMAN. We certainly appreciate your having come here and giving us this information. Mr. Dolliver?

Mr. DOLLIVER. Perhaps I am anticipating, but I am interested in a discussion of the various types of mental diseases as to whether some of them have physical manifestations in addition to the mental manifestations. Will that come up later, or can we go into it now?

Dr. WORTIS. I think we can go into it now.

Mr. DOLLIVER. You stated, Dr. Braceland, that there has been a very considerable decrease in the incidence of mental disease as compared to World War I, World War II, and the Korean conflict, and the percentages you gave were striking. Will you repeat them again?

Dr. BRACELAND. Yes, but they were not the decrease in the incidence of mental disease. It was a decrease in the number of men who had to be returned to this country because they could not continue to be utilized.

Mr. DOLLIVER. I am glad you brought that out, because I understood it the other way, that it was a matter of cure or alleviation of the situation that you referred to.

Dr. BRACELAND. There were just as many people who became ill, but through greater facilities and a better method of handling, they were able to treat the men up forward and use them again.

Mr. DOLLIVER. Did I understand you to say you have had some connection with the Veterans' Administration program for the mentally ill?

Dr. BRACELAND. No. Dr. Blain was the former Director. He is at the end of the table.

Mr. DOLLIVER. Doctor, I have had opportunity to look into the situation at the hospital in Knoxville, Iowa, for mentally ill veterans, which I must say is a fine institution. What is the prognosis for the incidence of mental diseases for World War I veterans as compared to World War II veterans? Are there any statistics on that?

Dr. BLAIN. I think the average age of World War I veterans, as I recall, is around 56 or 58. The average age of World War II veterans is between 30 and 40, I believe. The prognosis for the elderly group who have mental illnesses, as regards their length of life, is better than it used to be 30 years ago; they are staying alive longer, and so on. The promises of their being relieved of their mental illness, I would say, are somewhat better, but the changes in what we can do for elderly people are dependent mostly on the amount of attention we can give them, and there is not a great deal more manpower available for them now than in the past. However, some of the studies that have been conducted of people in the hospitals for a long time have been extremely encouraging where they have been able to bring the total assets of the hospital together to focus on their treatment and improve the conditions in the community and in the family so that there is a place for them to go. In the case of World War I veterans, therefore, much depends not only on technological improvements, but I think the greatest single factor is that when a patient has improved so that he could leave the hospital there is no suitable place for him to go.

In regard to the prognosis of veterans entering hospitals at this point, in institutions where they are able to bring together the optimum number of professional people—and some of the Veterans' Administration hospitals have been fortunate, where they are located near medical schools, and can get personnel—the number who are released who can go back to their homes and to work has been satisfactory. We have a great deal of knowledge if it can be used, but it cannot be used because of lack of personnel.

Mr. DOLLIVER. Has the peak of admissions of World War I veterans to mental hospitals been passed?

Dr. BLAIN. That leads to the question of service connections, but generally speaking the number is decreasing. I did want to say something about the ability to get people out of the hospitals. Some of the best manned institutions, showing what can be done if you have the assets, are able to get out 60 or 70 percent of the patients under 3 months. Another 10 or 15 percent are gotten out in a year, leaving something like 10 percent that do not get out within a year. The great majority, though, of the seriously ill cases still have to fight against the fact that we do not know the cause, and therefore we cannot prevent it, such as in the case of schizophrenics. Probably in that one single area in psychiatric research lies the greatest problem of all, but some progress is being made.

Mr. DOLLIVER. I would like to ask if there is a classification of these mental diseases as respects the physical evidence, or the physical symptoms, of the disease. Is there any such classification in mental illness?

Dr. WORTIS. There are several classifications of mental illnesses. I can give you one. There was another developed during the war. We have one classification that tends to indicate there is mental illness. One shows a brain disease. One can develop abnormality of behavior if he is under the effect of alcohol or a sedative, or he may develop a thinking disorder if he has severe diabetes or if he has a disease of the kidneys. Abnormal behavior may indicate hardening of the arteries. We see at Bellevue Hospital a large number of people come in because grandpa or grandma gets confused due to hardening of the

arteries. Sometimes disease of the brain in early life may produce behavior disorders during a lifetime. If there is not enough oxygen or not enough blood pumped to the brain, we have manifestations of brain disorders.

There is another group——

Mr. DOLLIVER. Before you leave that, is it fair to say that in connection with organic disturbances those are readily ascertainable?

Dr. WORTIS. I would say reasonably so. They probably represent 10 percent of admissions to a hospital like Bellevue.

Mr. DOLLIVER. And is it proper to say the majority of them can be cured by relieving the situation that brought them about?

Dr. WORTIS. That depends on how we can reach the situation. If a child has had encephalitis or sleeping illness in early life, I do not think we can cure that. We can cure a certain number of people. People addicted to alcohol or drugs, and people with tumors, we can do something for them. The diagnosis is not difficult, but the cure is doubtful in many cases.

As to psychosomatic disorders, in recent years we have come to realize that stress of a certain type in certain people will express itself in distress in a certain organ or group of organs. Individuals who have much stress and keep the trouble to themselves may get ulcers sometimes. There is what we call repressed aggression. A person gets very angry, and feels it inside; there are stomach changes. Ulcer formation in such instances have been proven.

In the psychosomatic group——

Mr. DOLLIVER. Would you define that term?

Dr. WORTIS. It is a group of diseases where psychological causes bring about a number of changes, even organic or structural changes in the organs.

Mr. PRIEST. Mr. Chairman.

The CHAIRMAN. Mr. Priest.

Mr. PRIEST. Before asking 1 or 2 questions, I want to make 1 brief observation. Granted that we still have a long and perhaps torturous road to travel before we reach anything like an ideal government, I feel the last few years have brought out developments that are thrilling in this field. Seeing the presence of Drs. Braceland and Wortis and Felix and Stevenson and others takes me back to the original hearings on the mental-health bill, and I am sure Dr. Felix and Dr. Stevenson will recall the discussion we had as to whether it should be called a neuropsychiatric institute or a mental-health institute, and we decided it should be called the mental-health institute. At that time, looking to the original concept of the legislation, this committee felt, I am sure, that in addition to providing a central national place for research into cause and diagnosis and treatment, that this program would result in a great impetus throughout the country at the State and local level in mental health. That has been one of the thrilling episodes throughout the country. I have noticed a change in the public attitude toward mental illnesses. It is no longer considered a disgrace to have in the family someone who is mentally ill. A few years ago it was something people tried to hide, and talked about in secret. I have seen that change in my own home town. I think we have attained that one goal quicker than I thought we would.

As a part of this brief observation, I want to pay a public tribute at this time to a gentleman who was at that time a member of this

committee and who is not now a member, the gentleman from Ohio, Mr. Brown. He was the ranking minority member of the subcommittee that handled this original legislation. We realized that in going to Congress with that proposal, except for the members of this committee who knew what we wanted to do, we were facing some Members who held the thought that mental health was something we could do nothing about. I recall the day before it was planned to bring the bill before the House, Mr. Brown called me and said, "Percy, we have the toughest selling job we have ever had. I will stand as firm as possible and be as persuasive as possible." I wanted this record to have that personal tribute to the work Clarence Brown did on that bill, because without it it would have been impossible to get it by. It was difficult at best.

At that time I think one of the great pressing needs was a very critical, acute shortage of trained psychiatrists. I should like to know to what extent that situation has improved. Has there been an appreciable increase in the number of trained psychiatrists?

Dr. BRACELAND. Mr. Chairman and Mr. Priest, there has been a marked increase. There are over 8,000 members of the American Psychiatric Association now. There are over 4,000 psychiatrists who have been certified by the American Board of Psychiatry and Neurology. At the time of those hearings there were less than 1,000.

Mr. PRIEST. That is all at this time.

The CHAIRMAN. We are all appreciative, Mr. Priest, of what you have done for the general cause of health, not limited to mental health, but, generally speaking, over a period of years, and we are very happy to have you still on this committee so that you can be of assistance.

Mr. SCHLAIFER. May I interrupt?

The CHAIRMAN. State your name for the reporter.

STATEMENT OF CHARLES SCHLAIFER, COCHAIRMAN, NATIONAL MENTAL HEALTH COMMITTEE, NEW YORK CITY

Mr. SCHLAIFER. As I said before, I am a layman. My name is Charles Schlaifer, cochairman of the National Mental Health Committee of New York City. I am concerned with what happens to the patients. The remarks Mr. Priest just made and that the Chairman just made led me to interrupt this hearing. I think one of the most exciting things has just happened. This has crossed party lines. This is an American thing that has happened, and I wish all the people of the country could be here to witness a congressional committee holding hearings out of session, and my sympathies are with you, too, to have to sit here and listen to all of the details of these diseases. I believe if I were you I would go home at night and worry about which disease I might have. I think the fact that such a committee would take the time and effort to go into this entire field is a tribute to the fac that much is happening in this field. It is only with an aroused public, and the public as represented by you gentlemen, that we can accomplish this. If we had Walter Winchell and John Teeter, it would help, too. The progress that has been made has all come about because of research.

The committee I represent is made up of men like Sherman Adams, Adlai Stevenson, and 40 governors of States that have interested

themselves in this field. It is not a matter of party affiliation, but a great American problem. Surely everyone who comes here says, "Ours is the greatest problem," or "Ours is the oldest problem," because all these people become so concerned and work so hard that they can only see the particular thing with which they work but it is a fact that if I should develop a heart attack today it would not cost you gentlemen a cent unless you wanted to send flowers to me or to my wife afterward; but if I should become a schizophrenic or mentally ill it would cost a great deal because the hospitals are tax-supported. Those in this field realize that, and that is why I, as a businessman and taxpayer, am cognizant of it. Just as Walter Winchell became interested in cancer through Damon Runyon, I discovered this vast expanse of hospitals with beautiful grounds surrounding them so that people could point with pride at the great mental institutions or "crazy houses," but inside the patients lived in terrifying conditions. Think of the figure of $2 and some cents per day for the care of a mentally ill person. Just imagine a man in a community who becomes mentally ill in a city of 100,000 population, and they call the family doctor. He is depressed and he cannot work and there is perhaps 1 psychiatrist in a community of 100,000. The man earns perhaps $5,000 a year. The doctor does him a great favor and instead of charging him $15 an hour, he charges him $7.50 an hour. After 3 or 4 months his savings are long since gone, and the doctor can no longer take the time to treat him free. He is somewhat better, but not enough. He becomes worse and threatens suicide or homicide. His wife goes to the doctor and to the Blue Cross. The Blue Cross cannot take care of him. He is sent to a State hospital where there is 1 doctor for 241 patients. This is bringing it down to the common denominator of what happens to a patient. As a layman, it is my feeling that if a little more is spent, or a little more time is devoted to research, or even to train people to apply the things we know today, we might prevent that from happening. It is very important that this committee has taken it up.

(The prepared statement of Mr. Schlaifer follows:)

STATEMENT ENTITLED "WITH ALL OUR GAINS—WHY ARE WE STILL LOSING THE BATTLE AGAINST MENTAL ILLNESS?" BY MR. CHARLES SCHLAIFER, NEW YORK, N. Y., COCHAIRMAN, NATIONAL MENTAL HEALTH COMMITTEE; MEMBER, NATIONAL ADVISORY MENTAL HEALTH COUNCIL; FOUNDING MEMBER, NATIONAL ASSOCIATION FOR MENTAL HEALTH; MEMBER, BOARD OF GOVERNORS, MENNINGER FOUNDATION; PRESIDENT, CHARLES SCHLAIFER & CO., INC., ADVERTISING AGENCY

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Mr. Chairman and members, I am Charles Schlaifer, a layman, not a doctor. I am cochairman of the National Mental Health Committee, founding member of the National Association for Mental Health, and a member of the board of governors of the Menninger Foundation. I have just concluded a 3-year term as a member of the National Advisory Mental Health Council, of the United States Public Health Service.

I am deeply honored to discuss with you the subject of how to reduce the burden of mental illness on our Nation.

I am representing today the National Mental Health Committee, an educational group of private citizens and notable psychiatrists who for a number of years now have been sacrificing time from business and professional duties to further this research, and the training of manpower to apply its results. Most of all we are proud of the many State governors, other high-ranking officials and outstanding leaders who are honorary chairmen of our committee, all working to cut down spending for the care of advanced mental patients, by discovering and applying cures in the early stages.

Gentlemen, mental illness is no longer a concern solely of its victims and their relatives. It demands the serious attention of all citizens who pay taxes. Mental illness is a community problem, a State and national problem. It is the gravest menace of all to the health of our people.

Most of the other diseases throw the cost burden on the patients and their families. This is often a heavy personal strain. But with serious mental illness the cost soon exhausts all resources of the patient and his relatives, and when he finally breaks down completely and goes to the hospital, the burden becomes so great that it falls on all the other taxpayers as well. Year-in-year-out hospitalization is the most expensive form of medical care known to man. There is hardly anyone who is not indigent when the catastrophe of mental disorder strikes. Ninety-six percent of hospitalized mental patients are in tax-supported hospitals.

According to a report just released by the research committee of the New York State Council of City and Village School Superintendents, 1 out of every 16

persons in the State will be confined to a mental institution at some period during his lifetime, and the number is steadily increasing. Unless immediate action is taken to counteract this dangerous trend, the report asserted, 1 out of every 12 children born this year in the State will sometime during his life suffer a mental illness severe enough to require hospitalization.

Describing the staggering magnitude of the problem, Dr. David G. Salten, chairman of the research committee, observed that from 1940 to 1944, 135,000 men from New York State were rejected for service or discharged from the Armed Forces because of emotional and mental disorders.

The State mental institutions, he continued, had 117,000 persons under treatment last year and "23,000 products of our schools were first admissions to mental hospitals."

In the current State budget, the report noted, $119 million was appropriated for operating expenses of the Department of Mental Hygiene. This, it said, "represents more than one-fourth of the total appropriations for current operations for all State purposes."

Capital outlays for the construction of additional mental hospitals, the report went on, amounted to $31 million, which is about one-fourth of the total State construction budget.

"The basic question," Dr. Salten declared, "is whether there should not be more attention given to these conditions in their early and more curable phases, particularly during childhood. Every dollar of money or hour of effort directed toward prevention could provide a one-hundred-fold return to both the individual and society."

Gentlemen, it is hard to realize what a terrific drain the mental disorders place on the country. Of all the hospital beds in the United States, over half are filled with mental patients. I have a chart which I would like to place before you which brings this out and the figures are taken from the Journal of the American Medical Association. This shows the amazing fact that on an average day there are more mental patients in the hospitals of the Nation than there are for all other illnesses combined.

And the cost of care for these mental patients is simply astounding! The direct cash expenditure amounts to over 1 billion tax-dollars a year, shared about equally betwen the State governments and the Federal Government.

Beyond that, the indirect costs of mental illness are several times greater. They include loss of earnings while the patient is in the hospital, loss of taxes on these earnings, loss of production to the Nation, social-welfare payments and cost of children's institutions when parents break down mentally. These indirect costs have to be taken into account as well, and they amount to several billion dollars a year.

It seems to me that we can never forget this fact: Whether we like it or not, this cost picture has to determine the size of our effort to control mental illness.

The future is certainly not bright. I was shocked to discover that since last year this spending for mental illness has mounted by more than $62 million. Estimates warn us that unless new cures are found and early treatment stepped up, we will be forced to spend around 15 billion tax dollars for the care of patients during the next 10 years. This is spending at the rate of $15 billion per year, instead of the $1 billion annually we are now spending.

These figures are based on the rate of growth of mental hospitals during the last 5 years, combined with an actuarial study made for the Hoover Commission.

The next question I would like to ask is: When are we going to cure more patients in the early phases, and save some of this money? How can we cut down the cost?

There are numerous things that can be done to prevent substantial amounts of spending. I have sifted many proposals and they all boil down to three measures:

First, the training of manpower to apply known treatments early;

Second, research to find new, better cures and preventives;

Third, enough preventive treatment centers at the community level—channels to bring the research discoveries and treatments to the people who need them, in early, more treatable stages.

We shall never be able to stop the appalling growth of our mental hospital population and reduce its size until we spade up our whole attitude toward training and research. We must ask ourselves, "Are we searching hard enough for new cures, training enough psychiatrists to reduct the hospital population?" That is our goal. That is the test for the proper scope of our effort. And the answer is we are not doing enough. We have been satisfied just to hold our finger in the dyke.

We must see it as a much bigger problem than we have in the past, requiring much more money and resources than we have been devoting to it. This applies to construction of facilities as well as training grants, research project grants, and fellowships for both training and research.

We have taken 1 step forward, but the patient pileup in the hospitals has pushed us 2 steps back.

We have made a start, but the rising cost of patient care is a blunt warning that our training and research are inadequate at the present level.

Gentlemen, that is what we are faced with, and that is why we say in spite of very laudable efforts so far, we are losing the battle against mental illness.

As Americans we can be proud that the Congress of the United States had the practical vision to face this menace squarely and set up a program to meet it.

A great deal has been accomplished since that time.

One of the best examples of this is the remarkable record of the Army psychiatrists in Korea.

Trained psychiatrists at battlefront first-aid stations began the treatment of psychiatric casualties immediately at the point of breakdown. They treated them as emergencies just the same as a bleeding wound from gunshot or shrapnel. The result was that in 2 weeks, 70 percent were back in active duty and a few weeks later 25 percent more were returned. Only 5 percent were sent home to veterans' hospitals.

A number of the psychiatrists who achieved these dramatic results on the Korean battlefield received part of their medical training through fellowships under the National Mental Health Act program.

These same curative skills can be applied in civilian life, as well as in Korea. As a matter of fact the treatments were developed by civilian psychiatrists. We have now reached the point were effective treatments exist for many patients, but not enough psychiatrists and community channels to reach the mentally ill who need the treatment. This is a far cry from the former days, when treatment was practically unknown.

It is amazing and most encouraging to realize what has been done on a pilot scale by trained psychiatric manpower.

For instance, since the establishment of a 13-bed psychiatric ward in St. Joseph's General Hospital at Savannah, Ga., commitments to the State mental hospital from that county have been cut 58 percent.

Another example: During 1951 the outpatient clinic of the Boston Psychopathic Hospital kept out of the State hospitals 175 patients at a cost of one-fourth the custodial hospitalization prevented.

The inpatient service at this hospital so shortens the usual hospital stay, that operating costs over the life span of the patient are three-fourths the amount now spent on custodial care in the regular mental hospitals. Patient turnover is so increased that seven times the number of patients can be treated in the same number of beds as in a custodial-type mental hospital.

Another example: The day hospital, a new-type treatment center, gives better treatment to patients at half the cost. In this unique facility, selected mental patients too ill for outpatient treatment, but not ill enough for 24-hour hospitalization, attend the day hospital from 9 to 5 and sleep home at night.

To sum it up, on the basis of actual pilot experience it is estimated that one-third of those now entering mental hospitals could be kept out altogether through outpatient treatment at one-fourth the cost, and another third could have shorter hospital stay, at three-fourths the cost.

This we could do by putting into practice the treatments already known. They are good, but not at all sufficient. We need quicker and better ones.

Will research produce new cures? Well, when we look at what medical research has already accomplished, we can see that the answer is "Yes."

Take, for instance, syphilis of the brain, which is the last stage of untreated syphilis. The rate of first admissions of these patients to New York State mental hospitals was cut in half from 1947 to 1951 as a result of the discovery and use of penicillin for the cure of syphilis.

Another example is the discovery of niacin as a cure for pellagra, which used to send many patients to the mental hospitals.

Another example is the discovery of electroshock therapy, very successful with mental illness of the menopause, certain aged patients, and others.

Gentlemen, here are three examples of how research has cut down the spending for the chronic care of mental patients. If it had not been for this research, the spending for mental illness would be millions of dollars a year greater than it is now.

But, gentlemen, beyond these achievements lies a great unknown. Psychiatric study during the last 8 or 10 years has led to a realization of how big and complicated the task of thoroughly understanding the mental disorders really it. Research has staked out important leads for further investigation. It has developed spectacular new research instruments, such as the electron microscope, the brain wave machine, the television microscope, the ultrasound equipment. Without these instruments we have been blocked in the past, but they are ready for full exploitation now.

For instance, evidence is piling up that mental breakdown is unbelievably complicated, because it involves not only the patient's body, not only his thoughts and moods, not only his relations with other people, but how all of these affect each other. Research has to make discoveries in each of these areas of human nature, and then put all the findings together. Only in this way can investigators uncover how mental disorders operate.

If we just let our minds dwell on this prospect for a moment we can get an idea how complex and far-reaching this task is, how many topics of inquiry, how many research projects and trained scientists will be required to develop fundamentally new tratments for mental illness.

It is not so baffling as it might seem, however, because the skilled researcher can see new leads accumulating every day in all these spheres of study. We are not working in the dark as we were some years back. During these last years since the National Mental Health Act we have moved up to the threshold of decisive advances, if we actually follow up these promising leads on an adequate scale.

For instance, Stanley Cobb, M. D., Bullard professor of neuropathology, Harvard Medical School and Massachusetts General Hospital, has the following to say:

"The recent addition to our knowledge of the physiology of the nervous system, and especially the effect of the hormones on human behavior, certainly make it seem more than a mere probability that the hypotheses and leads that we are now interested in can be transformed into practical projects for research that will pay off in the near future."

According to Dr. Hudson Hoagland, research at the Worcester Foundation for Experimental Biology has demonstrated a definite relationship between brain mechanisms and the action of the glandular system. Since disturbances in brain function are an important element in mental illness, there is reason to hope that future work may lead to a chemical treatment of great aid to the psychiatrist in some forms of mental disorder, although other treatments, such as psychotherapy, may be used in conjunction with it.

Also, Leo Alexander, MD., president of the Electroshock Research Association, stated recently: "It is definitely within the realm of possibility that shock treatments may some day be replaced by a variety of chemical effectors."

It is important to bring out at this point a very important difference between mental illness and some of the major physical illnesses such as heart disease, cancer, tuberculosis, diabetes, and others.

Mental illness is so complicated that we cannot expect to find the one cure for it through some pill, or serum, or vaccine. Drugs may help, but they cannot be simply prescribed for, and picked up at the drug store. They will always have to be used by the psychiatrist himself, as an aid to him in treating the patient.

Thus in some other diseases if a cure is discovered it can immediately be made available all over the country. In other words, a channel already exists for bringing the treatment to the patient once it is discovered.

In the case of mental illness, however, there is such a shortage of psychiatrists, so few clinics, so few general hospitals giving psychiatric service, that adequate channels to the community level do not exist for putting into practice the new treatments that have been and will be discovered through research. There are only about 7,000 psychiatrists now. We need 15,000 more, but are training only about 450 a year. Thus it is very clear that the need for training personnel and setting up these community services is all bound up with the need for research, much more urgently than with some other diseases.

Add to that, of course, another point. When a person gets heart disease, cancer, diabetes, or some other disease, the cost of it falls upon himself or family. But when a person breaks down mentally the cost falls on the taxpayer. That is why in the case of mental illness more than some of the others, government has a duty to the taxpayers to develop research, training, and community services to cut down the cost of care.

This brings us back to the program of the National Mental Health Act established by Congress to control this problem.

However, right from the start, the trouble has been that there were never enough resources devoted to it to accomplish the task. As long as the patients continue to pile up in the hospitals year after year, it is pretty obvious that the research and the personnel to treat these patients is not sufficient to halt the rising trend. And unless we raise our sights to a much higher level we shall never get on top of the problem.

Mental hospital officials in a recent survey stated that a least 4 percent of hospital operating cost should be devoted to research. This would amount to about $28 million annually, whereas only about $6 million a year is now available for research.

Research against mental illness is far behind research against other major diseases more in the public eye.

Total research funds available per patient under treatment in 1951 for the following diseases were:

Polio	$44.90
Cancer	26.60
Tuberculosis	15.13
Mental illness	4.75

That is why for the past several years we have pressed for a much larger research effort. There is no other way out.

In a major 2-year study of training and research just completed by the Council of State Governments, a poll of over 300 research workers throughout the 48 States revealed that the greatest obstacles to research are lack of money and lack of personnel who, after all, cannot be trained without money. This judgment was overwhelming. Three-fourths of these research workers stated that if they had adequate money and personnel they would be able to conduct many research projects of scientific consequence.

Now, I have not said anything about the humanitarian or the social aspects of mental illness; nothing about juvenile delinquency, drug addiction among the youth, alcoholism, sex offenses, and other crimes; nothing about the breakup of homes and the high divorce rate. But you in Congress who are close to the people realize that they are anxiously concerned with keeping such problems under control. And it has been found that all these troubles go hand in hand with mental illness. Many of these people end up in the mental hospitals, adding to their own misery, building up the taxpayers' burden, and weakening our social fabric.

I think you will agree with me, gentlemen, that now is the time to strengthen and not to weaken the moral and mental vigor of American life.

It is no accident that in the dictatorship countries, in Hitler's Germany and in Stalin's Russia, psychiatry as we practice it in America has been rejected.

We believe in the freedom of the individual, and healthy, vigorous family life. But the dictatorships subordinate everything to the all-powerful state.

We know that the mental vigor and health of the American family is the greatest bulwark against turning to subversive activity and juvenile delinquency and drug addiction among the youth, and the breakup of homes and all the other problems that walk arm in arm with mental illness in its various forms.

I have not said anything about the endless human misery resulting from mental illness, because I know we are all agreed on that. There is no victim of any other disease who could not walk into this room and speak up for himself. But you know yourself that we could not bring the living dead from the back wards of our mental hospitals in here before you. It would be too horrible; it would be past all bounds, and we could not do it. So therefore we have to speak to you for them, to speak for those who cannot speak for themselves.

In conclusion I would like to make the following statement:

It is my conviction, after a study of pilot programs in the psychiatric field, that the Nation's mental hospital population could be reduced by about one-third of its expected size, through an all-out program to train psychiatric personnel, and apply known treatments to potential hospital patients, and newly admitted patients.

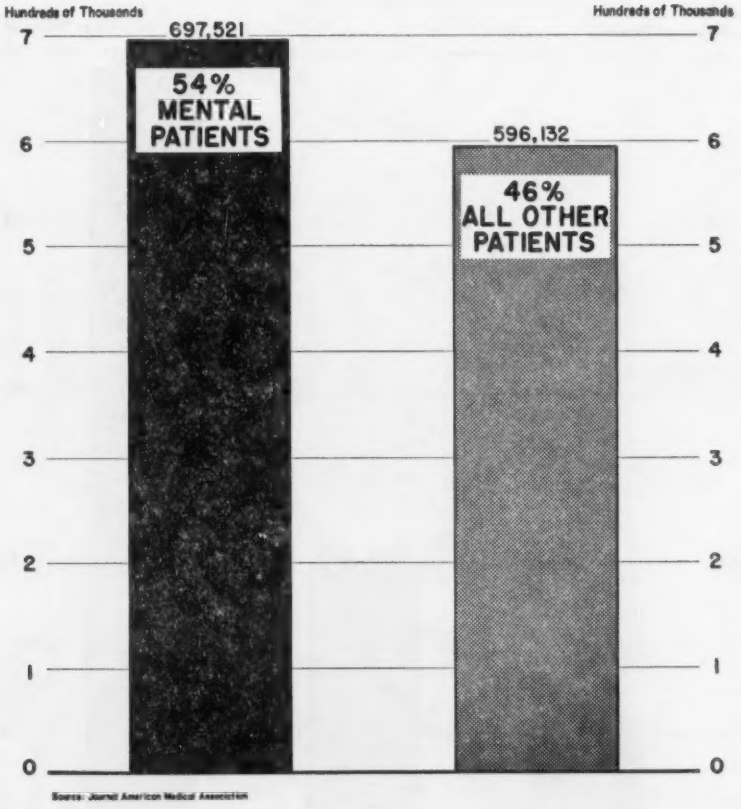
Even more important, an all-out research campaign to exploit promising leads recently developed, could produce new treatments for the major psychoses, which would eventually make further substantial inroads on the hospital population.

Such an achievement would wipe out patient overcrowding, personnel shortages, and minimize the construction of new custodial hospitals, thus saving the

citizenry several hundred million dollars a year. Hundreds of thousands of Americans would avoid the living death of chronic mental illness.

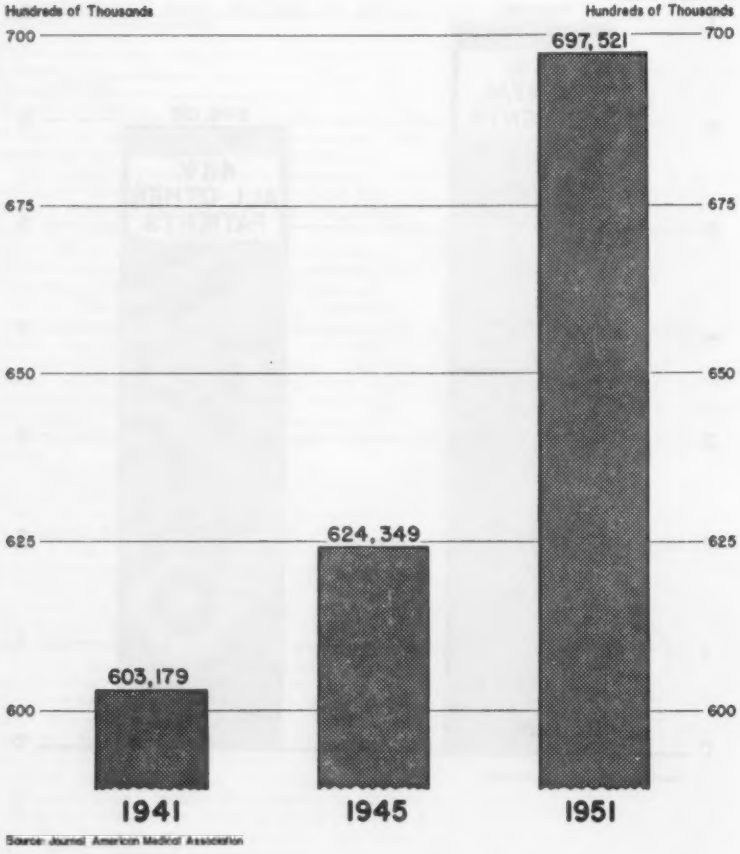
That is why the National Mental Health Committee advocates an aggressive, adequate program of training for early treatment through community facilities, and research for new cures, in the battle against mental illness.

DAILY PATIENT LOAD
ALL U.S. HOSPITALS-1951



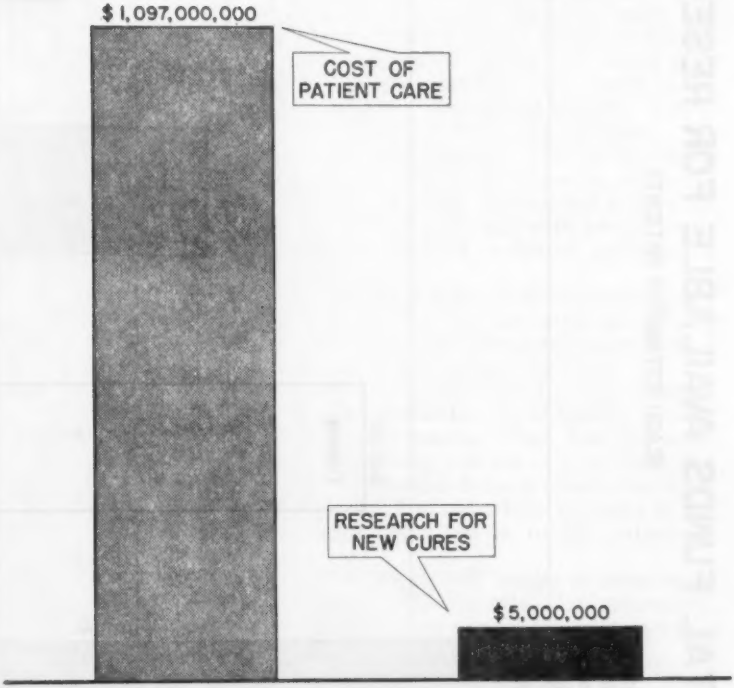
U.S. MENTAL HOSPITALS

DAILY PATIENT LOAD 1941 TO 1951



Source: Journal American Medical Association

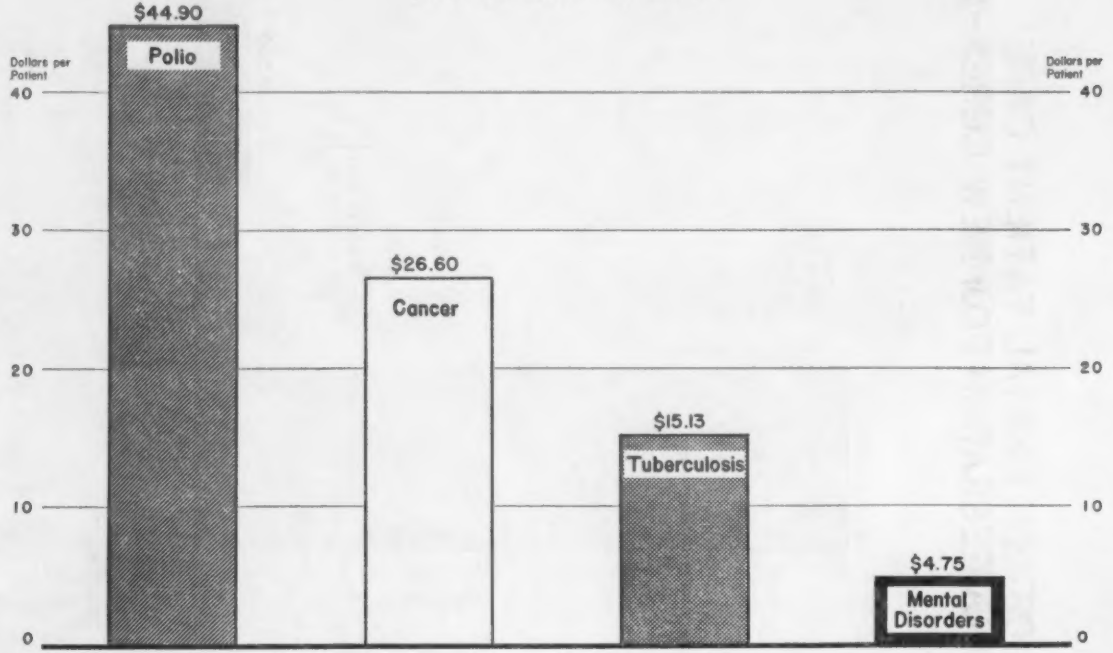
COST OF MENTAL PATIENT CARE AND RESEARCH FOR NEW CURES–1950



Sources:
U.S. Public Health Service
Veterans Administration
Council of State Governments
National Research Council

TOTAL FUNDS AVAILABLE FOR RESEARCH

(EACH ESTIMATED PATIENT)



Dr. WORTIS. Mr. Chairman, I would like very much to have Dr. Kety address the committee.

STATEMENT OF DR. SEYMOUR S. KETY, ASSOCIATE DIRECTOR IN CHARGE OF RESEARCH, NATIONAL INSTITUTE OF MENTAL HEALTH

Dr. KETY. Mr. Chairman, these eminent psychiatrists have spoken of the good results that can be achieved in the field of the mentally ill. Those of us in the field of research are concerned with those problems remaining in the large areas where the results are not promising, where the psychiatrist does not have the tools or information to cope with the problem. We are working in an area which is largely unknown. We are working in a field where we do not know the fundamental causes. And in the field of mental illness the causes may arise in a very broad spectrum, from the anatomy of the brain to the psychological experiences of the child and throughout his life. Therefore, research in mental illness has to cover this wide spectrum. Although my primary interests are in basic research, I think we should make the point that basic research in medicine flourishes in an atmosphere of clinical medicine. The basic scientist, by constant experience and constant contact with mentally ill patients and with people treating the mentally ill, is constantly stimulated to devote his research energies to these important problems.

I might mention one or two interesting research developments over the past decade or so, to give you the feeling that this is not an entirely hopeless field, and although the path may reach for many years toward ultimate solution, we are achieving results along the way.

Recently there have been 1 or 2 drugs developed. One, lysergic acid, if administered in infinitesimal doses that could hardly be seen, produces a condition similar to schizophrenia. That does not mean that schizophrenia results from something you eat in your food, but the important lead is that here is a chemical substance producing something like schizophrenia. If we could find out where it works in the brain, we might have some important clues as to the nature of schizophrenia.

Another drug is sodium pentothal, which will bring a schizophrenic into an area where he can be spoken to intelligently. Unfortunately, this persists for only a short time, but it has altered the schizophrenic for that period of time.

My group has been doing work on circulation in the human brain, measuring the amount of blood that flows to the living, thinking brain, and the amount of oxygen and glucose which it utilizes.

Schizophrenia is a mysterious disease. For many years it was believed that the schizophrenic became so because his brain did not receive a sufficient amount of blood. Studies have shown that the schizophrenics have a normal blood supply and a normal oxygen supply in the brain, and have suggested that perhaps schizophrenia is not so simple a disease of the brain; it may be related to the past experience of the individual and his impact with society.

The same technique has been used to study people with senile psychosis. In people with senile psychosis there is a marked diminution in blood that flows to the brain and a marked diminution in oxygen

to the brain. This is also characteristic of increasing age. All of us, as we grow older, suffer a decrease in the blood flow to the brain. In some the diminution is greater than in others.

These are simply examples of the kind of research that is being done. This, of course, is just one iota in a vast field. Research is being conducted in the National Institutes of Health, and some research is being supported by private institutions, on the anatomy of the brain, on the chemistry of the brain, and on the interrelation of one part of the brain with another. A young man at our institute has been working on spatial patterns in the cortex of a monkey, and one can see the action on a screen. It is possible to put fine electrodes in single nerves in the cells and record the action.

There are other important areas of research: The factors that influence behavior; the factors that guide the behavior of animals and convert them from normal to abnormal.

There are important developments in the sociological field and work in clinical psychiatry to better study those conditions. I have tried to touch only on some of the biological aspects. I am sure others here are better qualified to touch on the psychological aspects.

The CHAIRMAN. Any questions?

Dr. WORTIS. I would like to call on Dr. Sanford, who is a psychologist and can discuss clinical psychology.

STATEMENT OF DR. FILLMORE H. SANFORD, AMERICAN PSYCHOLOGICAL ASSOCIATION, WASHINGTON, D. C.

Dr. SANFORD. I would like to reiterate the point that has been made several times that more money put into research is likely to be a very sound investment. It is simple arithmetic that if you double the national expenditure for mental illness you would increase the budget by $1 billion. If you doubled the amount for research you would add $5 million or $6 million, or less than one-half of 1 percent, to the total expenditures. I think it can be argued that increasing the amount for research by $5 million or $10 million is likely to be a very good long-term investment, and while we know comparatively more, our ignorance is still vast. There are many cases we cannot do anything about. There are cases where a given treatment is a hit-or-miss matter. As a matter of economics it is a good thing to invest increased amounts of money if the money can be spent wisely in research. You cannot do research without trained people, and if you do not have the trained people the increased money cannot be spent wisely.

I cannot talk about the content of research in this particular area. I can talk about research strategy. I think in the strategy of dealing with the problems in the area of mental illness, or in the larger areas of mental health, we need to put due emphasis on research. I am sure you have heard this all the week. But while research on the Rorschach technique is helpful, I do not think it will give us a cure. If we are going to decrease the number of people in mental hospitals, we have to know more about the causes and we have to go way back asking questions that have no immediate relation. It might be well to point out that atomic fission was not brought about by experts in explosion. We will be struggling with mental illness for a long time.

The first point I would like to make is that research must be oriented toward the basic. I would like to point out also that research that has relevance to mental health must be multidisciplined research. That point has been made previously.

There are many scientists who can and will make advances having effect on people in mental hospitals, and all of these scientists must have encouragement to make their contribution to these problems. I would like to emphasize that we have much to learn in the very strategy of getting research done, about the administration of research programs.

In this area I think it would be interesting to think a moment about how Government relates itself with scientific research. I think it is a fact that the governmental concern and involvement with scientific research has doubled or trebled in the last 10 years, but I think both the Government and science have a lot to learn about this partnership.

In the behavioral sciences, it is true that the United States, both governmentally and nongovernmentally, supports behavioral science more than any other culture in the world. This, incidentally, is the basis of some patriotism on my part. The concern with mental health and the concern with the behavior of human beings is very recent in the history of science, and there is a real concern for it, and a willingness to support it, which is a very fine thing and a natural democratic thing to do. It is a question that makes my hair stand up when you consider the severity of the problem.

It is gratifying that the citizens of the Government of the United States can concern themselves and itself intelligently with this sort of business.

There are a few things about which I would like to talk, which might be considered piddling things, perhaps, but I think the Government needs to learn a great deal about the administration of research contracts which it fosters and pays for.

It seems to me to be true that the Government still tries to buy research like it tries to buy tanks or paper clips. The form of the contract somehow does not fit its proper function. I will leave that and go along.

Another aspect with which both the Government and scientists need to concern themselves is that of scientific publications. In a particular field there are a number of problems arising because the Government itself will not finance scientific publications. The Government will pay for the services of scientists; it will pay all expenses in getting research done, but it will not pay for the dissemination in most instances of scientific information.

The expense of publishing scientific knowledge is very high. The scientist cannot work in social isolation. The expense of publishing scientific articles is borne mainly by the readers of those articles—mostly people in research institutions and universities or by libraries who subscribe to scientific journals.

I make those points and stop there.

(The prepared statement of Dr. Sanford follows:)

STATEMENT OF THE EXECUTIVE SECRETARY OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

I. THE SIGNIFICANCE OF MENTAL HEALTH

The present statement need not add to the evidence, presented in other statements now before the committee, on the frequency of mental illness, on its cost to the Nation—in both misery and dollars—on the need for facilities to care for mental patients, and on the relatively small part of total medical-research expenditures that are directed toward the solution of mental-health problems.

It may be well to point out here, however, that the magnitude of the mental-health problem is not to be measured by counting the number of people now in mental hospitals. In addition to those who are institutionalized, there are many others, considered relatively normal, who, nonetheless, have severe and crippling emotional problems. There are delinquents, alcoholics, and those who are accident-prone. There are people whose failure to adjust swells our divorce rate. There are people who do live normally and work regularly but whose happiness and effectiveness are hobbled by curable psychological difficulties. For each of the half million Americans now in a mental hospital, there are perhaps 10 or 20 or 50 whose lives are crippled by some form of personality disturbance.

The problem of mental health is vastly greater than the problem of mental illness. The two problems can be separated only if we draw an arbitrary line between health and illness. In thinking about social or governmental responsibility for mental health, the line should probably not be drawn; nor should it be drawn in considering research; mental disorders are human disorders and there is good reason to believe that we will understand the more dramatic forms of disorder when—and only when—we understand the natural laws of human behavior. Research that helps us understand the human being will benefit not only the mentally ill but also the potentially ill and the millions of people who now live, because of emotional problems, far below their best level of effectiveness.

II. RESEARCH ON MENTAL HEALTH

It is obvious that solutions to our mental-health problems are to be found only through research. As our population increases, increasing millions of people will suffer from mental troubles and the burden on the taxpayer will grow unless we find new ways of preventing and treating mental illness. We can find these new ways only through scientific research. We will not find them for a very long time if we continue to put piddling amounts of money in mental hospitals and research centers, if we continue our failure to attract into the behavioral sciences a sufficient number of gifted young people, if we continue to make research work less remunerative—psychologically and financially—than service activities, and if we continue to build new wards and add beds while the laboratory is still housed in some cramped and ill-equipped attic.

The science of human behavior is a very young science. For centuries man has directed his scientific curiosity almost exclusively to the world about him. Only recently has he asked meaningful questions about events occurring within his own skin, and only recently and reluctantly has he given up his ideas about witches and devils as the causes of behavior disorders. Scientific psychology began less than a hundred years ago in a laboratory in Leipzig. The first American laboratory of psychology was founded by William James at Harvard University in 1874.

There is no reason in the nature of things why we cannot have a sound and systematic science of human behavior. We are making genuine progress in all scientific fields concerned with the behavior and well-being of the human being.

In the field of mental illness we are now able, for example, to prevent disorders due to dietary causes. We have learned through research what causes a few of the forms of mental deficiency and we know how brain injury can produce permanent mental impairment. We know how to treat successfully a great majority of the cases of involutional melancholia. And over four-fifths of the epileptics can now be restored to a socially normal life (though we still do not know how to prevent epilepsy). We know ways to help those with "normal" personality disturbances, and we have found out a good deal about factors producing delinquency, alcoholism, divorce, and other behavior problems.

There has been progress. But our knowledge of human behavior is still fragmentary and our understanding of mental illness is very incomplete. There are still many thousands of patients whose mental illnesses we simply do not know how to treat or how to prevent. For example, present-day treatment of schizophrenia, the most prevalent and most chronic of the severe mental illnesses, is still very much a hit-or-miss procedure.

Within the existing limits imposed by shortages of money and of trained people, present knowledge is being applied with intelligence and effectiveness. But present knowledge, if applied by twice the present number of psychiatrists, clinical psychologists, social workers, hydrotherapists, occupational therapists, and others, and applied in twice the number of institutions, could not possibly do more than halve the number of people in mental hospitals. A single research discovery tomorrow or next month or next year might achieve the same result. In the light of the slow pace with which science seems to develop, it would be very optimistic to bet all of our money that such a discovery will come even during our lifetime. But it would be foolhardy, on the other hand, to spend all our money applying treatment methods known to be only partially effective. We need to know more.

A. Research costs money

Knowledge gives man power. But power from knowledge is proportional to the resources spent in gaining it.

Each year the various States spend an estimated $560 million, in capital and operating costs, on mental hospitals and related services. The Federal Government spends an equivalent amount for the psychiatric care of veterans, and in the payment of pensions resulting from psychiatric disabilities. The total annual amount, from all sources, spent for research on mental illness is about $6 million or about one-half of 1 percent of the total expenditure. To most informed observers, this division of expenditure is grievously unsound. It is as full of folly as a military decision to freeze weapons development, putting all resources in the manufacture and use of existing weapons while little or no attention is paid to the future—to the improvement of weapons or to the increased study of better ways of using them.

Research must be basic

It would be a mistake to assume that bigger and better hospitals and greater numbers of people engaged in treating mental illness will automatically result in new knowledge of human behavior. Research involves something else than the clinical concern for patients. While it is very important that we learn more about existing diagnostic tests and about the most effective use of known methods of treatment, we will probably make more real progress if we invest heavily in the man who seeks to understand the basic laws of human behavior. The discoveries made by the basic scientists do not often have the appearance of immediare utility. But over a period of time it is the theoretician and the basic experimentalist rather than the engineer who does the inventing. (Atomic fission was not brought to pass by experts in explosives. The theoretical physicists did it.)

C. Research must involve a number of sciences

Research in mental illness must involve many disciplines. We know there are biological, psychological, and social factors in mental illness. We should know that an understanding of mental illness will not be created by those who apply any single scientific discipline. Research on mental illness not only must emphasize basic science, but must emphasize basic sciences. The neurologist, the physiologist, the physiological psychologist, the sociologist, and the anthropologist have significant roles to play in supplementing the research of the psychiatrist and the clinical psychologist.

D. Research requires trained men

Scientific research is a very demanding activity carried on by gifted and highly trained people. Research gets done only if there are people both able and available to do it. There are not enough people now available for needed research in the behavioral sciences. There seem to be several reasons for the shortage.

1. American waste of the talented.—Manpower experts, believing our very survival to be dependent on our creative use of our scientific and technical resources, are seriously alarmed over our failure as a Nation to use our intellectual talent. We have hundreds of thousands of potential scientists and engineers who, for one reason or another, do not continue beyond a high-school

education. And even those who do receive college degrees and who do have the talent for science, turn to business or to the professions when they find that research positions are not very secure nor very remunerative.

2. The competition for research skills.—The behavioral sciences must draw their gifted young people from a limited supply pool. At the present time the behavioral sciences—physiology, psychology, sociology, and anthropology—cannot compete too successfully with the older, more established, and more prestigeful natural sciences. A man with a Ph. D. in chemistry earns from $1,000 to $1,500 more per year than a man with a Ph. D. in psychology . (And while both the chemist and the psychologist drive Fords, the chemical engineer drives a Cadillac, or maybe a Chrysler.)

3. Selective Service policy.—Current Selective Service policy cuts very seriously into the supply of those who might become creative scientific specialists. In the past, Selective Service has postponed the drafting of graduate students until they had completed their specialized training. But no more. The country spends large amounts of money on the nurturing of special talent. The Government itself, through scholarship and fellowship programs, invests in the training of scientists. The Government needs scientists. The military needs scientists. But Selective Service steps in to stop the training of scientists, often just as the period of usefulness is about to begin. In at least two known instances, graduate students on Government fellowships were taken out of graduate training and drafted into the military, where their limited scientific training may or may not be used. Such procedures do not seem to make sense. The Government needs to get together with itself on manpower policy. No one can object to a policy that demands of each citizen that he directly serve his country for an equitable period. But there can be grave doubt about the wisdom of saying "You serve now" when in 2 more years the service can be very much more valuable to the country.

4. Patient load.—When a hospital is understaffed, a psychologist or a psychiatrist has more work than he can handle in giving whatever help he can to people who are desperately ill, whose suffering makes an appeal to every ounce of humanity he has in him. It would be a rather strange psychiatrist or psychologist who could deliberately turn his back on human beings to whom he might be a help and retreat to a laboratory where he could test an hypothesis on white rats. Intellectually he knows it would be very worthwhile to humanity to get some new ideas into the mental-health business, but humanly he could not turn his back on people who need his help at that moment

The only way to meet this problem is to make decent allowance for the care of patients, to seek out those talented people who can do research and to give them a clear assignment, a clear understanding that they are encouraged to do research work in an atmosphere in which they have time to do it.

It is fairly clear that in none of the specialized fields concerned with mental health is the supply of personnel up to the need. In many cases the supply is not even adequate to the existing demand. In 1953, there are approximately 500 clinical psychologists, or 1 psychologist per 1,000 patients, employed in State mental hospitals. The minimal standard for psychiatric hospitals and clinics, recommended by the American Psychiatric Association, calls for 1 clinical psychologist for every 100 patients for admission and intensive treatment service and 1 clinical psychologist for every 500 patients for continual treatment service.

E. Research requires facilities

Modern research demands equipment and modern scientific equipment is getting more and more expensive. Of course, you can run an entire psychological laboratory for years on the money it takes to build 1 cyclotron, 1 or 2 million dollars. But it's still true that the cost of laboratories and of scientific equipment is considerable. It is often thought by the public that the scientist is a queer duck who only needs a garret in which he can assemble a few old square boxes and some copper wire and some motors he has taken out of electric fans; but we cannot get new advances in modern science by continuing to treat scientists as poor relations. Mme. Curie and her husband worked in a freezing cold laboratory and in an unheated shed for years, but there is no reason to believe that their blowing on their fingers to get them warm enough to do their work actually helped their brains operate better.

The mental health expenditures for research operations are very small, as we have seen, but the capital expenditures for laboratory space and equipment represents an equally discouraging picture. Research scientists must have more tools and more space in which to use them.

F. Research requires organization and facilitation

Modern research tends more and more to be a team operation. Congress itself gets its information through teams of research staffs and through teams that are called committees. Thus it gets from exchange of facts and ideas a better result than any individual member could hope to get on his own. So modern science is no longer an aggregation of soloists, of virtuosos. It is like a symphony in which each player contributes a small part to the whole.

Research must be organized. But we must be careful that it not become so highly organized that the scientist is more of a hired hand than a creative individual. The most important factor in scientific research is thinking. And though thinking can be programed, it is sometimes programed into stultification. In many cases the best way to get the best thinking accomplished is to bring talented and trained people into contact with problems—and then leave them alone. If there needs to be research planning or supervision of research, it is cardinally important, both for the morale of the scientist and the productivity of the project, that planning be as intelligent and as flexible as humanly possible. And supervision of research must be in the hands of those technically and intellectually competent to judge the quality of research efforts. Many scientific and professional projects, both governmentally and privately sponsored, have suffered grievously because nonscientists and nonprofessionals have been given direct supervisory control over activities they do not fully understand. Those who do administer research must be responsible, ultimately, to nonscientists. But direct supervision of research personnel needs to be handled by those who know good research when they see it.

There is currently much dissatisfaction among scientists, both in the Government and in the universities, with the governmental handling of the administrative side of research. For example, take the case of one university scientist engaged in research on a problem of obvious and direct interest to the military. He refused several other opportunities for employment in order to accept a promised contract for research from a Federal agency. For 6 months the contract was under negotiation, while the scientist waited for his salary and his detailed assignment. After 6 months, the contract negotiations were dropped completely because of a legal technicality involving a copyright and having no relation to the content of the research, but which no university would have found acceptable. Needless to say, this research worker will be somewhat hesitant to offer his research efforts to the Government again.

In general the Government attempts to buy research in the same way it attempts to buy paper clips or rifles. Somebody needs to do careful thinking about the form, content and supervision of research contracts if our scientists are to do their best work and if the country is to derive the greatest benefit.

G. Research must be communicated

Research depends on communication. Science is a social phenomenon. Scientists need to interchange ideas if knowledge is to be, as it must be, cumulative. Those who sponsor research need to remember that scientists need to attend meetings, publish and read papers. Many scientists will agree that federally sponsored research programs—in the behavioral sciences and in all sciences—suffer because the Government does not recognize the importance of scientific communication. The Government will hire excellent scientific personnel and will pay all expenses of getting research done. But there the Government stops. It will accept little responsibility for the publication of the knowledge its scientists discover. The expenses of scientific publication are borne by libraries or individuals, who through subscription to journals, pay the costs of publication of governmentally sponsored projects.

From the standpoint of simple economy, the failure to publish in established journals the results of research is a serious waste. It leads to unnecessary and unproductive duplication of research.

In connection with the problem of publication, a resolution recently passed by the American Psychological Association is relevant:

"A research program is not complete without the dissemination of findings having general scientific significance. Publishing is an integral part of the research progress, and should be supported on the same basis as any other part. Agencies sponsoring research, including universities, should make adequate provision for publication of results in any appropriation for a research program. It is particularly undesirable to leave the burden of paying for publication as a personal charge upon the scientist himself."

Many scientists, both within and without the Federal Government, will also agree that the recent drastic cut in travel funds, cuts making it impossible for Government scientists to attend scientific and technical meetings, falls into the category of very dubious long-term economy. The scientists cannot work with effectiveness in social isolation. If the Government takes steps to keep its scientists' noses to their isolated grindstones—through prohibiting travel and through refusal to sponsor publication—the Government is taking steps to emasculate science.

III. Information about the organizational activities of the American Psychological Association in the field of mental health

The American Psychological Association is a scientific and professional organization whose chartered purpose is "to advance psychology as a science, as a profession, and as a means of promoting human welfare." Besides its organizational function, the association publishes 10 scientific journals. The nonpublication activities of the association are financed through member dues. Its publications are financed through subscriptions. The organization at the moment has 11,000 members and will take in more than a thousand new members on January 1, 1954. Approximately 60 percent of its members possess the Ph. D. degree in psychology. The remaining 40 percent have the M. A. degree or its equivalent.

There are many kinds of psychologists who work in a variety of settings. There are experimental psychologists, physiological psychologists, educational, child, social, statistical, counseling, school, industrial and clinical psychologists. About half of all these psychologists are engaged in research and teaching in college or university settings. Others work in industry, in schools, in State and local hospitals and mental health clinics, in governmental (both military and nonmilitary) programs of research, and in connection with governmental (military and nonmilitary) hospitals and clinics.

The psychologists most directly concerned with mental illness are the clinical psychologists. Of the 11,000 members of the American Psychological Association, about 4,200 specialize at various levels of training in the clinical area. About half of these are connected with colleges and universities. The other half are engaged in research or service in nonacademic settings.

Graduate training in psychology is designed to prepare students primarily for research. There are many psychologists, as indicated above, who become involved with the treatment of mentally ill persons. They are obviously making an important contribution. But psychologists probably will make their greatest contribution through research.

Approximately 55 percent of these 4,000 clinical psychologists hold the Ph. D. degree. Another 20 percent are still in training. Another 25 percent hold the M. A. degree and are employed, under professional supervision, in research or service operations. Seven hundred and seven clinical psychologists hold the diploma of the American Board of Examiners in Professional Psychology.

The American Psychological Association, through its 17 divisions, its 40 boards and committees and its 10 publications, works in a variety of ways to help these and all other psychologists make their best contribution to the human enterprise.

The CHAIRMAN. Are there any questions, gentlemen?

I was greatly interested in a remark which you have just made with respect to the lack of publications. What reason would you assign for that? It would seem to me that it could be termed as neglect.

Dr. SANFORD. I think, generally speaking, scientific publication in the area of behavioral sciences is pretty good. It would be, it seems to me, a good deal better if it were possible for the Government to put some of the resources—some of the research budget—into publications.

I think the reason for this failure on the part of the Government to support publications has come about because people do not know the difference between printing and scientific publications. It is understandable that people working for the Government cannot go outside to buy printing, except in exceptional circumstances. The Government can do its own printing very well, but the Government

cannot do scientific publications. Only existing journals can make an article ready for publication through abstracting the material and disseminate it into the libraries. Only existing established scientific journals can perform scientific publication. The Government cannot collect the facts in the way of operating in the scientific field.

The CHAIRMAN. That surprises me in view of the fact that frequently there comes to our attention publications by the Government on certain subjects and you wonder who is responsible. I have in mind one of these Government publications having to do with the lives of bumble bees, or something to that effect, and I am wondering about that sort of publication, together with publications on recipes of good cooking and all those sorts of things, when there is such a hesitancy in this particular line which you have directed our attention to.

Dr. SANFORD. Well, the Government does do a good deal of publishing in the field in which we here are interested, but the point I would like to make is that governmental publication is not as adequate in the field of science as publication through existing scientific journals, which the Government, because of some interpretative handling somewhere—I do not understand it—the Government cannot purchase printing in a scentific journal and it cannot substitute effectively for printing in a scientific journal.

The CHAIRMAN. We appreciate your having emphasized this thought that you have just expressed, and it is a matter to which the committee could probably give some serious consideration to its solution.

Mr. PRIEST. Mr. Chairman, would you yield for one question?

The CHAIRMAN. Yes; I shall be glad to.

Mr. PRIEST. I gathered from what you said that you believe that the successful publication of scientific information was a job for the scientific journals in any particular field. Then, you suggested also that the Government—the position of the Government might be to give some additional attention to the dissemination of scientific information in its budgetary program. I wondered if you had in mind, for example, let us say, the publication at Government expense in the American Psychiatric Journal of a special study or of information that might be considered of great value to the profession and to the public at large. Is that what you had in mind, Doctor?

Dr. SANFORD. Yes, sir.

Mr. PRIEST. I see.

Dr. SANFORD. I do not know about the finances of the American Journal of Psychiatry.

Mr. PRIEST. I used that merely as an example.

Dr. SANFORD. We publish 10 journals and we get them out somehow. They are much smaller than they need to be, and the research that is coming out of governmental programs in psychology is not competitive with research that is coming out of the universities and there is no way that the Government can make more publication space available under present regulations.

Mr. PRIEST. Thank you, Mr. Chairman. That is all.

The CHAIRMAN. Are there any further questions?

Mr. DOLLIVER. I am interested in the various names of these associations here, and I direct this question to anyone whom the moderator will wish to reply to it. We have the National Association for Mental

Health, the American Psychiatric Association, the American Psychology Association, the National Mental Health Committee, the Association for Research in Nervous and Mental Disorders, and the one which is entitled the "Institute for Living." Those are the ones listed here. Now, I do not take it, then, that the sole interest of all of these various organizations represented here is mental disorders. These sciences have some aspects aside from mental disorders; do they not?

Dr. WORTIS. Mr. Chairman, I believe Dr. Braceland could answer that.

Dr. BRACELAND. Mr. Chairman and Mr. Dolliver, these association names came out in various guises as we proceeded, and I would like to eliminate one immediately, and that is the one which was used simply to identify one of the speakers. That is the Institute of Living which happens to employ me at the moment, and I in identifying myself brought that name in as a way of saying where I came from in this work. It is a private mental hospital—nonprofit—and is 130 years old.

The American Psychiatric Association is an association of American psychiatrists, as the term implies. It is the result of the work originally of mental hospital superintendents, and it used to be the association which concerned itself primarily with the insane in mental hospitals, and then it was elaborated upon.

The American Psychological Association in turn is a group of clinical psychologists and research psychologists and educational psychologists banded together on a national scale.

The National Association for Mental Health is a combination of several societies which Dr. Stevenson represents and is the medical director of and could speak much better about it than I. It is a group of laymen and professional people who are interested in the welfare of the mentally ill.

Then we have the Association for Research in Nervous and Mental Diseases, a group which crosses all party lines, as it were, and takes in neurologists, psychiatrists, basic research men, and they are particularly interested in research material and are represented here today by our moderator, Dr. Wortis.

Mr. DOLLIVER. But the fact is that all the interest of these associations and, indeed, the individual psychologists is not directed to mental disorders, but they have some research in the ordinary mental processes as distinguished from mental illness; do they not?

Dr. WORTIS. Mental health and mental illness.

Mr. DOLLIVER. Both health and mental illness?

Dr. BRACELAND. The line is thinly drawn between the two in some instances.

Mr. DOLLIVER. It must be rather difficult sometimes to distinguish between those who are mentally well and those who are mentally ill. Have there been any acceptable standards drawn up to determine that?

Dr. BRACELAND. Not exactly, Mr. Dolliver. There is a general feeling, however, and the psychologists would like to go on record as saying that they do not consider it their task to push people through a little door marked "Mental illness," but rather to make the road of normality so wide that we can get most everyone on it.

Mr. DOLLIVER. Just from a layman's standpoint, I would assume that the thing we are talking about today are those who are very clearly over into the area of those who are mentally ill.

Dr. WORTIS. No, sir. We are talking about a group which covers the entire spectrum from maladjustment to the area of mental illness, and I hope some of the other speakers this morning will elaborate on that.

Mr. DOLLIVER. I will defer any further questions I have on the subject until that time.

Dr. WORTIS. I would like to call on Dr. Stevenson, who has had an enormous experience in this field and who, I hope, will clarify some of these points, Mr. Dolliver.

The CHAIRMAN. Before we proceed with Dr. Stevenson's presentation, I believe Mr. Heselton has a question.

Mr. HESELTON. Pursuing somewhat further the line in which Mr. Priest was interested with regard to the enactment of the national law and what followed, I understand the State governments conducted quite an extensive survey of institutions in the entire field so far as they were concerned as well as from the county standpoint. I also understand there has been tremendous progress in the grant-in-aid program in establishing clinical facilites and things like that. I assume there is something on the bright side of this picture in terms of what the State governments and the counties have been able to do in cooperation with the Federal Government. I hope someone will cover that now and show what progress has been made.

Dr. WORTIS. I was going to ask Dr. Felix to cover that situation, since he is close to it. I thought perhaps, with your indulgence and the chairman's indulgence, we would have Dr. Stevenson first and then ask Dr. Felix to explain that situation.

STATEMENT OF DR. GEORGE S. STEVENSON, NATIONAL ASSOCIATION FOR MENTAL HEALTH

Dr. STEVENSON. I assume that the question has to do with the full range of mental deviation. I think that can be clarified best by saying that there is a dividing line, which we call "commitment" which in general segregates a certain group who are ill, and hospitalizes them against their will. There are in hospitals, in addition, a considerable number who go there of their own volition. They agree to give notice of 3 days or 10 days or whatever it may be, and you might say they come in a little bit below that very severe group. But, in the aggregate, these probably run around 900,000 to 950,000 cases, of which all but perhaps 300,000 are in mental hospitals.

Studies, Mr. Chairman, that have been made indicate that there should be around 900,000 or 950,000 of that sort, and if one extended the figures—the statistics from New York—to the whole of the country, he would find about that many missing. If one used the statistics found in epidemiology studies in Baltimore and in Tennessee, the same approximate result would come.

Now, that accounts for approximately 1 million. There are in addition, representing another line—the mentally deficient group whose characteristics are not strange behavior but, rather, simple behavior, and they are the ones that you recognized when you were in school.

They failed year after year, and they just could not keep up with the great majority, and in adult life they were able to do only simple jobs. That also includes a severe group which amounts to about 150,000 who are in institutions at any one time.

Now, below that, you have a considerable group of more or less incapacitated individuals who are living in their communities. Some of them are very severe cases of psychoneurosis, and that severity might run down into cases who are able to carry on their regular work, and maybe their chief handicap is social or domestic, but they have still a serious handicap although not serious enough to incapacitate them. There are others whose difficulties are more along the lines of inability to follow the usual lines and dictates of society. They represent a distinct—not too distinct—I should say, clinical grouping, but we find them more frequently as violators of the law and we find many of them in our penal institutions. We find quite a number of them in our institutions for alcoholics or for drug addiction.

Then, there is that strata—and that is a very sizable group—and we cannot count them because the borderlines are always too uncertain and numbers tend to accumulate—I mean the size of the numbers accumulates at the borderline. Then we have below that in severity what we might call primarily behavioral disorders. We would not say that they are essentially neurotic, although some of them are not differentiated from neurotic patients, but they are people who get into difficulty. Perhaps the best way by which we could identify them would be to say the "unapt group" that we found in the armed services.

Below that and still in this same general group of people we have a large number—an uncounted number—who come to the attention not of physicians—some of them may be referred to a psychologist or other physician—but they come to the attention of other functionaries in the community. Some are very disturbed over philosophical matters or are in a religious quandary, and naturally they go to their clergymen. Some of them have problems entirely within the area and functions of the clergy. If the clergyman is well informed, he recognizes problems which he would want to handle only in cooperation with one experienced in the area of mental illness. Some of these people, as I indicated before, the teacher finds in school. There are those who fail year after year.

Then there are those who are chronically economically incapable of handling their own lives, and there are agencies which run into a large number of those.

There are those who come into the courts, and I have referred to them already.

There are other functionaries in the community that run into this large borderline group, and they can sort out some of them for psychiatric study, but the majority of them they have to handle in the course of their own techniques and their own daily activities.

That constitutes the full range and it is a rather immense range. You have then the alcoholic, the delinquent, the addict, and the extension of delinquency into the criminal problems. Then we come to that large group that is found in our general hospitals. About 40 percent of the patients in our general hospitals have a sizable element in their disabilities and health that is dependent primarily on the same sorts of life experience that handicapped the mentally ill, and the handling of their problems is inadequate. Many of the hospitals

would reject these as patients if they came with that label, and so they have to be admitted, and often honestly so because the nature of their disability is not recognized as nonorganic disease.

I mentioned four functionaries in the community, and perhaps the one who advises with people more frequently than anyone is the employer. There is the real test of the man's effectiveness. Of course, the courts find them in divorce actions also, but the employers find them, and some of them deal with those cases with remarkable humanity. Recently I was talking with the head of one medical service in one industry, and I was astonished at the extent to which they bend their practices to get alcoholics back. They feel it is a disgrace to discharge these people, and if they are confronted with no alternative, they sometimes promote a man from down below and put him alongside of the weak one that they are dealing with in order that they may retain him in his position.

These are or this is a sort of general perspective on problems that cover the spectrum, and I think the word "spectrum" is an excellent word when applied to this matter and which was referred to by Dr. Wortis, and you know when it comes to definition that that presents a real problem. I know what red is, but if somebody said "Where does red end and orange begin," I would be up against it, but I know what red is.

The CHAIRMAN. That was a very complete statement as to the different types of cases. I wonder if there is another class that think they are all right and that everybody else is queer.

Dr. STEVENSON. There is a minority of us there. I thank you.

The CHAIRMAN. Are there any questions, gentlemen?

Had you finished, Dr. Stevenson?

Dr. STEVENSON. Yes, sir.

(The prepared statement of Dr. Stevenson follows:)

STATEMENT BY GEORGE S. STEVENSON, M. D., THE NATIONAL ASSOCIATION FOR MENTAL HEALTH, NEW YORK, N. Y.

I am representing the National Association for Mental Health. That is a national citizens organization concerned with improvements in the care and treatment of the mentally ill and deficient, in the prevention of mental disorder, and the advancement of mental health. It was founded in 1909 by Clifford W. Beers, a former patient who suffered seriously from neglect as a patient in mental hospitals. The National Association for Mental Health has affiliated State associations in 29 States and over 200 local mental health associations. It is a member of the World Federation for Mental Health, which has similar objectives and operates on an international level. Each of these organizations focuses its effort upon activities carried on primarily within the scope which it represents.

The offering of testimony before this Federal body is a typical function of the national organization. In addition, it advises in the establishment of services, it promotes improvement in professional training, and promotes and supports research.

I personally am a psychiatrist, but my work has for years been organizational rather than clinical.

I hardly know where to begin in trying to bring before this committee an adequate perspective on mental illness. The allotment of time is so short and the problem so tremendous that I am bound to understate the case. You may have heard it said that mental illness is our No. 1 health problem and I shall try to explain why it occupies this unenviable position. The fact that you allow only 3 hours in which to gather a perspective on it leads me to question whether you are convinced that it is really a first-line issue. If you have doubts as to its position, I must hasten to say that you are not alone in this viewpoint. You are not exceptional. You are in large company and that is the main problem of those who are attempting to do something about mental illness.

I can hardly believe that members of our State legislatures could believe that this is our No. 1 problem and at the same allow the overcrowding of our mental hospitals to continue to be as serious as it is, and to allow only $3 a day on the average for the provision of every aspect of care and treatment. In many instances I know that the doubts about the importance of this field stem more from the will to disbelieve than from ignorance, for disbelief is bound to make those feel better who otherwise would recognize that they are parties to a serious neglect. Reducing the significance of mental illness makes those feel better who, because of their own unrational thinking—a fault into which all of us fall, think that their mental health is vulnerable. It makes those feel better who would economize at any cost. It makes those feel better who would put administrative expediency or administrative simplicity instead of patient care in first place in running an institution. For the more we try to do to serve patients, the more we must join hands with other State and local governmental and nongovernmental services and the more complicated administration becomes. For example, the great benefits offered by the Barden-La Follette Act of 1943 for vocational rehabilitation have been made known to our hospitals. It provides a service to recovered patients which in many cases the vocational history of the patient clearly calls for. Still in many places no advantage is taken of the opportunities offered under this act. It is this subordination of the mentally ill to expediency that blocks many other efforts that we are making in their behalf.

The research carried on today is extremely important, but is in no way a source of pride when one considers the immensity of the field and how much research should be going on. And the same may be said of professional training.

But it is obvious that this committee has not closed its mind as completely as many others have done and I sincerely congratulate you on that. You have asked for frank comment and from your openmindedness endless gain can come.

Never has the association which I represent had resources to work with which are at all commensurate with the problem. After 44 years it is now just beginning to lay the foundation for adequate financing, but progress is slow and we are working against great odds. Our inclination, in fact our policy, is to conduct our campaign wherever possible through the medium of organized fund raising in communities, for we recognize that the opportunities to influence mental health reside with many community agencies and we cannot afford to set ourselves up in competition with or isolated from those other agencies. So far we have had only a pilot campaign and this year have raised in all about $1 million, all but about $100,000 of which is supporting the budgets of State and local mental health associations, for without strong State and local mental health associations we can expect neither adequate financial support nor adequate citizen action in building up the national, State, and local services and protections that are needed.

Many of the activities which this association has carried on in the past have been transferred to other jurisdictions because they are more appropriately located there. For example, the collection and reporting of statistics is now a function of the Federal Government. Both the Federal Government and the American Psychiatric Association are now carrying on investigations of mental hospitals which formerly was a part of our work. The approval of training centers for psychiatrists again is no longer a function of this organization, being now appropriately carried on by a professional association. But it was our task to initiate these things.

Please keep in mind that in the case of no other illness do our States treat so many patients, nor does the Federal Government. In fact, well over half of the patients hospitalized under Federal auspices are frankly mentally ill cases, to say nothing of the psychoneurotic patients who are often classified under other medical and surgical categories. Most of the States fall far short of enough provision even of poor quality. I would remind you that New York provides 1 bed in its State mental hospitals for every 175 of its population, compared to an average of the whole country, which provides 1 to only about 330 of its population, barely half as much. I do not want to convey the false impression that New York has more mental illness than other States. By all indications there is no important difference in the incidence of mental disorders. Many of the other States just don't care for them. Instead of more than the 800,000 patients that it would be expected would be found in our State mental hospitals, on the basis of studies of incidence, we find about 300,000 less. This is a measure of the failure of the States to make provision for patients who are so severely ill that legal commitment is possible. And this figure does not include the million and a half mentally deficient who are the dullards, the alcoholics, the neurotics, and the other deviants.

This field offers many promising leads for research, leads that have not been followed up. Our researches have shown that in schizophrenia, which is the most common of the serious mental disorders in our mental hospitals, the adrenal glands are not behaving properly. This is a lead of such tremendous human significance that instead of a few laboratories in which biochemical research is being pursued, it would pay us to put 100 researchers in one place, sweeping through this problem and ferreting out every promising path of progress. An industry spending as much would certainly do it if it were confronted with a baffling obstruction to the success of its endeavor.

The mental illnesses of the aged, hardening of the arteries of the brain and the inactivation of brain cells, constitute the greatest group among the admissions to our mental hospitals. We suspect on good grounds that in many cases the deterioration has not gone so far as to be hopeless. The fault may be more a nutritional interference with the function of brain cells than the destruction of brain cells.

Where else in medicine would we find such promising leads passed by or given so little recognition? What other disease of major magnitude offers so much promise of recovery? Even with the limited resources of $3 a day, the results achieved are surprising, for in 1949, when 104,000 patients were admitted to our State hospitals, nearly 15,000 were discharged as recovered and over 32,000 as improved. What other illnesses result in such a tremendous loss of working years? Malzberg has shown that there is an average loss of 8.3 years by those who become mentally ill enough to be admitted to our State hospitals, and this average includes the senile and arteriosclerotic who break down so close to the actuarial limit of productivity that the loss is negligible.

It includes, on the other hand, the schizophrenic whose average loss is 20 years. Think how much saving has already been achieved by the empirical and superficial use of shock therapies and how much more the gain would be if research should lead us to more rational therapies and to ways of protecting the recoveries that we have brought about at great cost. Malzberg has shown again that on the average the loss in productivity per case is $9,932. This is a most conservative figure, for it is a loss calculated only after hospitalization, and many of these patients have suffered additional severe loss of working years because they have been sick a long time before reaching the hospital. Of course, there are other mental illnesses that bring the total up to as many as 9 million people, but many of those are not as seriously and economically incapacitated. What else completely incapacitates an estimated 2 million people for so long, 1 million psychotic and 250,000 low-grade mental defectives, uncounted severe alcoholics, and severe neurotics?

Mental illness is, as a rule, not a killing disease, and that partly accounts for the fact that it is not taken as seriously as some others. But there are more than 17,000 who commit suicide annually, and to that extent it is a killing disease.

What other disease calls as heavily upon the taxpayer as does mental illness? In the case of what other disease would the public tolerate a change of professional staff with a change of political administration? Fortunately, this is not the rule, but it happens far too often. What other illness is neglected until the patient becomes sick enough to be hospitalized? What other illness is a disgrace? What other disability than mental deficiency, involving 2 million cases, is represented by so few Federal research grants? What other disease than mental illness appears so often as a complication of other illnesses? Peptic ulcer, high-blood pressure, and asthma are outstanding examples. Do you appreciate how often a doctor or a nurse is trained to the point of licensure with almost no preparation in this field?

So I could go on and on in supporting the fact that this is our No. 1 health problem. But if these facts are not impressive and conclusive, adding more will not serve any purpose. An organization such as I represent attempts to stand as the citizen's conscience in meeting it because it is composed of citizens who know, who understand, and who care.

But apart from treating and caring for mental illness, we are interested in its prevention, and things brings us almost immediately into a demand for research. There is so much that we do not know about prevention. We know enough that is firm with respect to prevention to give us courage, but beyond that our foundations are uncertain and we need research to solidify them. We are certain, for example, that if one does not suffer a syphilitic infection or if he is treated promptly, he will not suffer from general paresis. We can understand the meaning of prevention when we realize that this disorder which

35 years ago constituted 10 percent of the admissions to our mental hospitals is now with better preventive work providing only between 2 and 3 percent. There are a few other disorders in which prevention can likewise be confidently carried out. But in all they constitute only about 8 percent of all of the cases and do not include the mental illnesses of old age that are so abundant, nor schizophrenia.

It is true that we have important theories and leads and that we make every effort to promote preventive work even on a theoretical basis and even though the results are uncertain, for we are justified in leaving no preventive stone unturned. Only by applying what we know or even suspect do we learn and make progress. On the same basis we try to protect the recovered patient from relapse by seeing that he is not subjected to the conditions which broke him down originally. Proper occupation for about 15 percent of these patients seems to be important to their holding their gains, and yet as I have indicated before, this is not yet taken seriously enough because of administrative expediency.

Federal support of training and research has been emphasized by Secretary Hobby as being very appropriate Federal functions and great gains have been made through the partial realization of that principle. I say partial because much more could be done were the provision of research funds to the National Institute of Mental Health more extensive and more certain. A year-to-year support has its limitations for it forces a research worker to plan his work so that it can be completed within a 12-month period, when adequate pursuit of the research activity might call for a 5- or 6-year stretch. A short term project is uneconomical and frustrating to those who have long-range plans.

My organization is one of the pioneers in a coordinated and designed research program. For 18 years it has been spending money on research in dementia praecox, money supplied by the Northern Jurisdiction Scottish Rite 33°—at present $70,000 a year. There are about 17 research projects, but they are not independently conceived. They are 17 parts of a total interrelated plan and our effort is to weave a network of research about this disorder and gradually close in on it. I believe we are succeeding, but the speed with which the closing in takes place with that small amount of research money makes us impatient.

In addition to its work with schizophrenia, the National Association for Mental Health has on occasion devoted research funds to the study of psychosomatic problems, that is, a study of physical illness complicated by emotional disorders.

The job to be done in this field is so tremendous that an organization such as ours is forced to decide on priorities so that its resources may be applied most effectively and economically. In judging the priorities of any prospective activity or any area of the field, it asks itself certain questions. How seriously does the phase of mental illness under consideration or the proposal for action affect the people (patients) involved? Figuratively are we considering a pimple or a carbuncle? And next we ask how many people does this affect? Is it a common disorder like schizophrenia or is it a rare one? How seriously and extensively does it affect society? For example, does it disrupt a family? Is it related to crime? Does it handicap an industry? Does it upset a school or a college? Does it constitute a heavy tax burden? As a fourth question we ask: Where do we stand scientifically? How much do we know? What is the next step that we need to take and be sure that our feet are on solid ground?

And finally we ask: Has the public come along to a point where it is willing to back us up in doing what we should do? Often we find that the first four of these questions would lead us to vigorous action, but that the fifth question warns us that preliminary work must be done in order to bring about public backing. Sometimes, therefore, our sole effort is focused on public education when otherwise we are ready to move faster. Public education is essential in achieving our objectives. Public backing is the only safeguard for the legislator or Congressman who would move faster. We, however, recognize that education is an instrument leading to change and not an objective in itself, so that the audience, the objective and the message all must be clear before valid public education can be undertaken.

This organization has since its beginning provided both impetus and professional counsel in the establishment of diagnostic services, therapy, care, and rehabilitation. It has conducted demonstrations. Its most recent experiments have led the way to vocational rehabilitation for patients recovering in mental hospitals and for patients attending outpatient clinics. It is now clarifying the statutory and nonstatutory facts that affect State administration of mental

hospitals. This organization has provided the main leadership to the country in the establishment of psychiatric clinics for children and in the training of personnel for such clinics. It now has a manual which is used by communities interested in establishing such service.

When we review the full range of the field, we appreciate how much we are not doing. Taking only the severely ill one need only ask: Where are the mentally ill? He is led immediately to a long list of social institutions which demand the attention of the citizen. This list would include somewhat in the order of importance the State mental hospitals, the Veterans' Administration hospitals, the city and county mental hospitals, the Public Health Service hospitals, services to the penal institutions, the Armed Forces hospitals, private mental hospitals, psychiatric departments of general hospitals, institutions for mental deficiency—both public and private, hospitals for alcoholics and drug addicts. In addition to this there are the known institutional community facilities that meet severe cases of mental illness, especially those coming to the private physician, courts, and other resources for helping people in need. We can't pass over any of these. We cannot escape the seriousness, the extent, the social implications, the scientific unknowns, and the public apathy toward this problem.

The CHAIRMAN. I believe Mr. Heselton has a question.

Mr. HESELTON. Doctor, I notice you are listed as representing the National Association for Mental Health, and I notice that in 1951 your association received quite a substantial increase in the amount of funds over the previous year. In 1950 it was $194,000 and in 1951, $600,000. I am inclined to believe that is because of the merging of a number of these groups, but I am not certain about that.

Dr. STEVENSON. That is right. Practically all of those funds in that year were received from foundations and other contributors whose efforts were merged.

Mr. HESELTON. That is all, Mr. Chairman.

Dr. STEVENSON. A part of it represented also confidence in the foundation and the feeling that this merging was a good thing.

The CHAIRMAN. Is anyone in a position to tell us what the overall cost of caring for these cases is in the different public and private institutions?

Dr. WORTIS. Yes.

The CHAIRMAN. I am just informed that that was in the record before I came in this morning.

Dr. WORTIS. Mr. Chairman, I believe Dr. Felix could give us these figures. They are available through his office and his staff.

STATEMENT OF DR. ROBERT H. FELIX, DIRECTOR, NATIONAL INSTITUTE OF MENTAL HEALTH

Dr. FELIX. Mr. Chairman, with your permission and in the interest of time, I will give one figure rather than the breakdown, but I will be glad to submit for the record the full information if you wish.

The cost of the care of patients in mental hospitals plus the cost including Veterans' Administration hospitals plus the cost for pensions of neuropsychiatric disability of veterans, Veterans' Administration pensions, comes to about $40 million over $1 billion a year at the present time. For the past several years the annual figure has increased at the rate of around $100 million a year. I will let it go at that unless you want some more information.

The CHAIRMAN. That illustrates the tremendous problem that this presents. We could continue here for a week, and nothing would illustrate more clearly and more definitely than the statement that you have just made as to the immensity of this problem.

Dr. FELIX. Mr. Chairman, I should like to mention one other figure, and I hesitate because I do not want to discourage you. May I be so bold as to mention one other figure, which I think illustrates what we have ahead of us if the situation does not change.

If the present birth rate remains constant, if the number of mentally ill who are hospitalized remains constant, and if the cost for hospitalizing the mentally ill remains constant, each year's crop of new babies will, because of the percentage of them who will go to mental hospitals, cost the taxpayers—this is just the taxpayer and not any private foundation—$800 million before they die.

The CHAIRMAN. It is time somebody began to think about this in a very serious way.

Dr. FELIX. I wish to God they would, Mr. Chairman. We have many people working in this field, but we sometimes get a little heavy hearted. Not through any fault of the Congress, because they have been most generous, but there is so little public understanding of the problem. If the whole Nation would begin to understand; if people would work for their State hospitals and mental-health clinics in their communities and assist their schools to develop better guidance programs for the students who are having problems; if we could do something in the field of marriage counseling to save homes that are breaking apart because of psychological reasons, much could be done. These things mean as much as the funds which you and those in the upper House between you appropriate for the program which I have to administer. I do not mean by this, gentlemen, that I could get along with less, but that is one aspect of the program and public understanding and support are other important aspects.

For some reason or another, gentlemen, there seems to be a feeling among many of the people in our country—the people on the highways and byways and my home in Kansas and your home wherever it may be—that if you forget about mental illness and ignore it, it will go away. There is another thing I would like to mention. And this is something that I wish someone, maybe some of you gentlemen who are experts in public life and know how to sound out the opinions of people could suggest methods of handling. If a person other than we who are professional psychiatrists, psychologists, and so forth, shows an interest in mental illness and begins to push for increased attention to the problem, immediately you will see people who will begin to look at him out of the corner of their eyes and wonder why he is so interested. They suspect something happened to him or some member of his family.

On the radio and television, in magazine articles, in newspapers you can hear or see or read articles about people who tell of their experience with a heart attack or "I was a sufferer from cancer" and tell what science did for them and what more needs to be done on the problem as a whole. I wonder if any of you have ever seen the same kind of thing in connection with mental illness. There was one program on television a short time ago, on a national hook-up, in which a well-known person stated that he had been ill. Perhaps with the exception of that individual and one or two others, have any of you ever heard a person in public life—a public figure—get up in public and say "I had a nervous breakdown" or "I had a mental illness. I have recovered." I just pose that question, gentlemen. I daresay if I were a Member of the House of Representatives and had had such

an illness—I am a part of this culture, too—I would probably be rather careful that that did not get out if I could help it, because it might hurt me every other November. Is not this a terrible situation? We hide this thing and cover it up; we alibi for it and bury our heads in the sand, gentlemen, and this is the greatest problem, the most expensive health problem, we have in this country. Excuse me. I have to live with it every day.

The CHAIRMAN. Your emphasis is excusable.

Dr. WORTIS. Mr. Chairman, Mr. Heselton asked a question before about the State governments, and I did not want that to go unanswered, since we are fortunate to have in the room Dr. Willey who has worked with that group. I wonder if Dr. Willey would say something about that in answer to Mr. Heselton's question.

The CHAIRMAN. Will you give your name, Doctor, and your position?

STATEMENT OF DR. RICHARD WILLEY, EXECUTIVE ASSISTANT FOR THE AMERICAN PSYCHOLOGICAL ASSOCIATION

Dr. WILLEY. I am Dr. Richard Willey and I am executive assistant for the American Psychological Association and also formerly research associate for the Council of State Governments, which prepared one of the two reports which have already been referred to.

Concerning the relationship of the Federal Government and the States, the States' role in mental health in the past, I believe, has been somewhat different from that of the Federal Government. The States have traditionally had responsibility for the actual care and treatment of individual patients, whereas the Federal Government's interest has more recently been centered in sponsoring research, in the program of the National Institute of Mental Health, and a more overall approach to this problem.

The States have very recently taken a great deal of interest in the promotion of mental health. The period between 1948 to 1951 or 1952 was the period of peak interest in increasing the buildings available to mental institutions, increasing building programs, and adding wings to hospitals and building new hospitals, and so on. I think that was a very successful move. It did, however, result in revealing unfortunate shortcomings in that after many of the State building programs had been completed, it became apparent that there were not adequate staffs to actually use these buildings. So that while bed space was provided, there was some doubt as to whether the actual level of care was improved as much as the building program had been. Hence the need for personnel and increased research, which has been brought into more prominence within the last 2 or 3 or 4 years.

The States are extremely active in promoting their mental health programs. A resolution of the governors conference in August was made to the effect that a conference of all State officials or representatives of the State agencies concerned with mental health be held on a national scale. In addition to that, there has been a great number of increases in budgetary allocations for mental health in some States. This, however, has been very selective, and while certain States have taken a great deal of initiative in increasing their research and training programs, others have not.

Mr. DOLLIVER. Doctor, would you comment on this situation? I think this has been going on in my home State of Iowa. There has been a trend toward removing the less seriously afflicted patients in the State hospitals to other institutions, such as county homes or nursing homes. Is there any general pattern on that which has been going on in the last 2 years?

Dr. WILLEY. That has been the subject of a great deal of discussion in the States because of the overcrowding of State institutions. I think it is generally felt—and I would defer part of this question, however, to the psychiatric representatives—that it would be a great help if particular classes of patients could be so transferred. There has been considerable reservation about actually doing it, however, because of the fact that homes for the aged usually do not have adequate medical staffs. The homes for the aged—the convalescent homes—have been a great aid, but again the number of them is limited from the standpoint of adequacy of facilities.

There has been some study made of whether certain types of patients could be more adequately cared for by the States if new types of institutions were set up, but most of those plans have not come much further than the discussion stage to my knowledge.

Mr. DOLLIVER. I have read a statement somewhere—or maybe it is a residue in my mind—that there has been a great deal of overcrowding in some of these State institutions. Has any measure been taken recently to alleviate that situation?

Dr. WORTIS. I believe Dr. Stevenson, if I may interrupt, could answer that.

Dr. STEVENSON. Yes. I think one important measure was the Hospital Construction Act, which has been taken advantage of by many States in assisting them in developing more hospital beds. I believe the situation has not in the least been alleviated, however. Population grows faster than beds, and overcrowding shoves them up into attics that were intended for that use, shoves them into buildings that were intended for the artisan; it shoves the paint shops down in the basements in buildings in which patients are located, so that the hazards of fire are great; it increases the drain on the utilities which were, let us say, constructed for 1,800 patients and now have to serve 3,000. A hospital on whose board I am a member has approximately 50 percent overcrowding. It was built for 2,100, and it has housed 3,200. My State and your State and, California, Tennessee, and Wisconsin are the only States left that retain the county system which reflects the ancestry of the State hospital which was the almshouse. Under the county system, if it gives adequate service, it is far more expensive. Burlington County, N. J., has a county hospital. If that county transferred its patients to the State hospital which serves that area, the patients would get better service and the county would save $100,000 or more, which represents the difference between what its share is in the State hospital and its full service to those patients in the county hospital.

Mr. DOLLIVER. To what do you attribute that additional or excessive expense in the case of local treatment of these people?

Dr. STEVENSON. There are a number of factors. One of them is that these institutions provide opportunities to appoint people to their staffs and it provides opportunities to contract. I think that is, frankly, the largest ill, and so the opportunity to do away with them

is greater at a time when the labor market is tight and demands for jobs are not so great. I would except from that statement several county hospitals that are just as good and some better, but I do not know whether they are more expensive or not. They are hospitals that range from 1,500 to 2,000 patients—along in there. There are several others, but I am talking about the small ones.

Mr. DOLLIVER. Those are in the larger cities?

Dr. STEVENSON. They are located in Milwaukee, Detroit, Newark, N. J., and so on.

Mr. HESELTON. In view of the report which has been made about the interest of State groups in this problem, I am wondering what the general attitude of the State legislatures has been. Have they been cooperating, or have they not been cooperating?

Dr. STEVENSON. There is just one thing that I would like to say about that. I would say they have been, in general, exceptionally cooperative in the sense that they have been willing to stick their necks out beyond what public support would warrant, but we know they cannot keep on sticking their necks out unless there is more public backing. And unless more public backing is developed soon, their necks will have to be pulled back. When a State advances on the basis of what I think of as polite blackmail—putting the bee on the legislature—and nothing is done to follow up and support it, we can be almost certain that there will be a recession.

Mr. SCHLAIFER. May I speak to that, too?

The CHAIRMAN. Yes. We shall be glad to hear from you.

Mr. SCHLAIFER. The honored chairman of our National Mental Health Committee is the one who is responsible for that resolution being introduced to the Council of State Governors and for its being put into effect. Now there will be some hearings and some continuing meetings in regard to it. Several of the members here have worked on that plan, but what has happened in the States I think is a very interesting thing.

I think there has been, generally speaking, in this entire field what I would term "a great deal of 'buck passing'." The State legislatures have these hospitals on their hands, and the tremendous cost of them has already been pointed out. As you gentlemen know, in your own States close to one-third of the operating budget is for the care and treatment of patients in the hospitals, and the funds have never kept pace with the needs. When one of the governors in one of these States who is very much interested in this whole problem—one of the leaders in the field—wanted to do something about it, his State legislature said "Why should we appropriate a great deal of money for research and training when it will benefit New York State? Let New York State do it." New York State has done the biggest project that is going on.

There has been the general idea that this is something which has been pushed back—the idea of mental illness and care and treatment has been pushed in the background, and the information in regard to the tremendous sums of money the taxpayers pay for it, but they do not pay for it in the sense that they are getting an end result. I think this is a very serious problem that the States have to work out.

Mr. HESELTON. That leads me to ask another question. Has the fact that the Federal Government has gone into this field and appropriated what possibly some people may think are inadequate funds but still

funds that add to the general picture—has that served to discourage initiative on the part of the State and the voluntary groups?

Dr. FELIX. On the contrary. Mr. Chairman, if I may, I can give you a figure on that which will illustrate it, and this is in the field of mental health services generally in the State—not the State hospital—because none of the Federal funds that go into the State hospitals are considered as being embraced in this program. In the original hearings they were considered solely a State responsibility.

The matching formula requires that there must be 50 cents of State money to every dollar of Federal money allocated to the States out of the appropriation for that purpose. Originally, in the first year, 1947, it was about 50 cents State money to $1 of Federal money, and in 1953 it was this way: For every dollar of Federal money there was $3 of State money, and in terms of gross figures, we started at 50 cents to a dollar and reversed it. The total amount appropriated by the Federal Congress and by the States is $17 million of Federal funds to match over $43 million of State, local, and private funds.

The CHAIRMAN. Are the last figures which you have for the year 1953?

Dr. FELIX. No; that is the total situation for the 6-year period 1947–53. The Mental Health Act was passed in 1946, and the first appropriation was made in 1947.

Mr. HESELTON. In connection with some of these statements which have been made as to the action on the State level, recently my attention was called to an article which had been written by a gentleman who had been on the staff and visited a number of hospitals in one of the States. It was perfectly amazing as to the report he made in terms of the absolute lack of any kind of adequate care from the standpoint of finances. I believe it was something like 50 cents a day for food, and you cannot feed anyone on 50 cents a day. I assume—and I think you have already testified—that diet in many of these cases is extremely important. That leads me to think that it is not only a responsibility in regard to the diet but that there is a very definite responsibility to wake somebody up in at least some of the State governments in regard to this situation.

Mr. SCHLAIFER. You will find in some of the State hospitals that they have some of the finest facilities, but that causes them to have less in the research picture. Unless we do enough research in the field of prevention and cure, we will still have more beautiful hospitals and perhaps we will feel better as human beings since we do not have "snake pits." But we still are not doing enough to get the people out of the hospitals and keep them out of them. Therefore, it becomes an overall problem of how much research and training can be done to effect this result.

Dr. WORTIS. Mr. Chairman, I think it would help a great deal to hear from Dr. Felix in terms of what the Federal Government funds under the Mental Health Act have done not only in this field to help the States at the level of matching grants but also what has been happening in the field of training, technical consultation, and research. I think that might be well worth being made a part of this record so that the Congress would be advised on that point.

The CHAIRMAN. Very well. We shall be pleased to hear from the doctor.

STATEMENT OF DR. ROBERT H. FELIX, DIRECTOR, NATIONAL INSTITUTE OF MENTAL HEALTH—Resumed

Dr. FELIX. Mr. Chairman and gentlemen, I would consider this in effect a report to my employer, since that is who you are. In addition to this committee here, I would like to preface my remarks by one statement. Mr. Priest mentioned the distinguished gentleman from Ohio who was so responsible for working with him in the passage of the act, and there were many others both in the Senate as well as the House. Without any attempt to single out any living person, I should like to feel that as I speak, I am speaking to one who is not here but who recognized this problem, who worked hard in the upper House, and whom I think should hear this report wherever he is, and I am sure that wherever he is is a good place. I refer to the Honorable Robert A. Taft of Ohio.

The Mental Health Act, as you gentlemen are all aware, provided for activities along certain lines. We were instructed and the money was appropriated to foster research through grants-in-aid, through investigations, and through laboratories; to promote the training of professional people in these fields and to assist the States and, through the States, the communities in the development of mental health programs. In order to advise us and to keep us aware of the professional and of the community needs and interest, the Congress very wisely directed that there be appointed as adviser to the Surgeon General and to his staff a National Advisory Mental Health Council.

All applications for research or training grants must be reviewed by the National Advisory Mental Health Council and recommended favorably to the Surgeon General before payment can be made. The Surgeon General may make no grants-in-aid for research or for training except as the applications are recommended favorably by the National Advisory Council on Mental Health, a group which is made up of not less than six professionals. It is usually broken down into 6 professionals, and 6 laymen, and I do not like to use the word "laymen" because it depends on what you are, whether you are a minister or a lawyer or something else. So let us say six people not professionally trained in the mental health area.

The Surgeon General does not necessarily have to make a grant to every applicant who is favorably recommended by the National Advisory Mental Health Council.

The applications for grants exceed in sums requested, the appropriations.

Now, I should like to tell you something about what has happened in this program since we had our first appropriation back in 1947.

In the 6 years since 1947 in the field of research 203 research projects have received grants.

These grants were in support of research in such areas as psychosis—organic and functional, neuroses, child behavior disorders, psychopathy, behavior disorders, psychosomatic disorders, menal deficiency, problems of general psychological adjustment of children and adults, problems related to marriage, the aged, chronic crippling diseases, situational stress, speech and reading disabilities, and so forth.

Until the creation of the National Institute of Neurological Diseases and the first appropriation therefor, the National Institute of Mental

Health also supported research in the area of the neurological disorders.

Now, another area, and a very important area in which these grants have been made is in the fields of development of new therapies and treatment for the mentally ill from a psychological standpoint, and utilizing biological, chemical, and social science treatment methods and a combination of methods.

In addition to this program for the assistance of research projects as such, there is a fellowship program in which we are authorized to assist young scientists at the postdoctoral level to develop research techniques and skills and to stimulate their interest in making a career of research in mental health problems rather than going into some other field of investigation.

During this period of time, since 1947, we have made fellowship grants to 183 individuals.

Some of these individuals have received a second year fellowship award. Some of our most promising young scientists in the country have come from this fellowship program.

Last year at a symposium in New York under the aegis of the Milbank Memorial Fund I heard one of these young men—I felt paternalistic, as he had received his support under our fellowship grant—give a very full discussion of some of the psychological implications of animal behavior, and how this can be related to human behavior.

In our own intramural program, which is another aspect of the research carried on out at Bethesda, and at our field stations we have had laboratory studies going on in some areas for several years. For example, at our Addiction Research Center which is located at Lexington, Ky., we have been studying the nature of drug addiction, and some of the psychological and physiological effects of narcotics. With the completion of the new clinical center, we are now getting under way on an extended program of laboratory and clinical research.

In the field of training we try to expand existing facilities for training so that these good facilities can accommodate more students, without compromising the quality of what the students are offered. In other words, increase the faculty, and so forth.

Second, to improve the submarginal facilities so they can give a good high type of training to students.

Third, where the regional need indicates, we try to assist in the development of training facilities in order that students who live in that area will be able to receive specialized training there and not have to go elsewhere for it. So many students remain in the area where they receive their training.

A recent study in that connection showed that most of the professional people locate within a radius of 200 miles of their alma mater.

So, it is rather important to get these training centers in the areas of need.

Since 1947, in a 6-year period, 117 training centers have received grants from us in the fields of psychiatry, clinical psychology, psychiatric social work, and the techniques of nursing and public health as part of general mental hygiene.

Before the creation of the National Institute of Neurological Diseases and Blindness, the National Institute of Mental Health handled that.

In addition to those 117 training centers, 42 medical schools in the country have received grants as part of their undergraduate medical training program to develop a good teaching program in the field of psychiatric and psychosomatic disorders for the medical student.

Over 6,000 students have graduated from these schools and are now practicing somewhere in the country with this additional knowledge.

In addition to the grants to institutions we also, under the authorization of the National Mental Health Act and the appropriation act each year make stipend payments of not to exceed $10 per diem to qualified individuals to assist them in maintaining themselves and to pay for their training while they are in training status.

About 2,245 individuals have received such stipend grants in these fields which I mentioned a moment ago. There have been 2,979 traineeships awarded.

At the present time, in the fiscal year 1954, there are 669 such trainees receiving assistance.

I believe Dr. Wortis has told you about the high percentage who went into public service, into teaching, and into research.

Eleven percent are still in training, and the remainder are in military and private practice.

In addition we have made grants to professional organizations, such as the American Psychiatric Association, the American Psychological Association, the American Association of Psychiatric Social Workers in order that conferences could be held at which the chairmen of departments and other teachers could come together and discuss problems of curriculum improvement. As a result of this we are seeing some rather significant changes in the impact on teaching, making it more up to date and more awake to the problems that these people who are receiving training will face upon the completion of their studies.

Now, this has assured an increase in the participation of the States as a result of the stimulation of the Federal grant-in-aid money.

In addition to that we have a program of technical assistance which is furnished to the States in which consultants are located in the regional offices of the Department throughout the country, and on the invitation of the States we have assisted them by consultation and conference in the development of programs.

As a result of this we have seen a lot of States come in with effective programs where none existed before.

You might be interested in knowing that there were 24 States which had a mental health program other than in the hospitals prior to the passage of the National Mental Health Act. Today all of the States, the District of Columbia, and the Territories have such programs.

One problem that we are now meeting a little better is knowledge of the number of mentally ill in the country, but on how long they stay in the hospitals much information is needed.

We are now working with the States on the adoption of what we call model reporting, so that we can know the caseload and how many people are ill, and what we can or must provide for the future. Now, there is a great deal more that I could tell you, and there are details which I could go into, but I will not because of the shortness of time.

I will be glad to try to answer any questions if you wish, but, as I say, time is fleeting, and I will rest on that, if you please, sir.

The CHAIRMAN. Mr. Carlyle.

Mr. CARLYLE. Dr. Felix, I think we see many signs that disclose that the people of the country are demanding better and more modern facilities in the treatment of the mentally ill. Do you agree with me on that?

Dr. FELIX. I do sir.

Mr. CARLYLE. There is a large program now under way in several of the States to improve these facilities.

Only last week in North Carolina a statewide bond issue was carried by a large majority in order to provide more modern and better facilities for those who are mentally ill, and I think that is true in many of the other States. So, that is encouraging.

Dr. FELIX. Yes, sir; it is.

Mr. CARLYLE. That is all.

Dr. FELIX. I might say, Mr. Carlyle, and if I may, Mr. Chairman, that North Carolina is very fortunate in having one of the honored members of our profession, a man whom all of us have heard and know about, to head your mental health program down there, Dr. David Young.

Mr. CARLYLE. Yes, I know Dr. Young.

Dr. FELIX. You are extremely fortunate in having him, and you can expect great things from him.

Mr. CARLYLE. Dr. Young is doing spendid work in North Carolina.

Dr. FELIX. He certainly is; yes, sir.

The CHAIRMAN. Are there any further questions, gentlemen?

Mr. PRIEST. Mr. Chairman.

The CHAIRMAN. Mr. Priest.

Mr. PRIEST. Dr. Felix, did I understand correctly that since 1947, when your first appropriation was made, you had placed 203 research grants? I was not sure I had that figure right.

Dr. FELIX. Yes, sir; 203 is right.

Mr. PRIEST. Doctor, have they been fairly well distributed in hospitals, universities, and clinics across the country?

Dr. FELIX. Yes, sir.

Of course, when you see it put on a map you get a pattern which coincides almost exactly with the distribution of the scientists in the various parts of the country. Where the people are who are interested in research is, of course, where the research money has to go. There are areas of the country where there are fewer than others, and, therefore, you will find fewer spots on the map in those places, but as far as the facilities, both physical and human, are distributed you will find a distribution which coincides with that very closely.

(The prepared statement of Dr. Felix follows:)

MENTAL ILLNESS

(Prepared for the Committee on Interstate and Foreign Commerce of the House of Representatives, October 8, 1953, by the National Institute of Mental Health, National Institutes of Health, Public Health Service, United States Department of Health, Education, and Welfare)

BACKGROUND AND HISTORY OF PUBLIC RESPONSIBILITY FOR MENTALLY ILL

The concept of public responsibility for the care of the mentally ill reaches back into antiquity. In Grecian history it is recorded that the priests of the temples assumed a responsibility for providing shelter and care for the mentally disordered. The first instance of a state institution specifically designated for the care of the mentally ill and the epileptic is recorded in Arabian history about the years 500–600 A. D. Both before and following this time, the mentally disordered

were regarded as persons possessed by the devil or by demons. As a consequence, they were persecuted, driven out into the countryside, and left to wander among the beggars, the poor, and the mendicants. In keeping with existing ideas about the cause of mental illness, it is readily understandable that these people suffered persecution and many were physically tortured and killed. In the 13th and 14th centuries isolated localities and communities became more humanitarian toward those who were poor and made their livelihood by begging, and established almshouses for those who were unable to care for themselves. Gradually this concept was extended to include the physically handicapped and the mentally ill. Almshouses had their origin in England, the most famous of which was located at Bethlehem which is remembered as the notorious "Bedlam." With the migrations of people from the Old World to America in the 17th century, the establishment of almshouses for the indigent people was but a natural outgrowth of the culture from which they had come. Ultimately the almshouse lead to the establishment of what are known today as the municipal hospitals. As the country grew, so grew a need for hospitals. In 1752 the Pennsylvania Hospital was established by private subscription in Philadelphia as the first institution in the colonies exclusively devoted to the care of the sick. In the case of the Pennsylvania Hospital, provision was made for the first time in the colonies to provide care for the mentally ill.

About 20 years later the first institution devoted exclusively to the care of the mentally ill was established in this country, brought about by a request to the Virginia Assembly to provide a State institution for "idiots, lunatics, and other persons of unsound mind." Thus was established the first State institution for the care of the mentally ill at Williamsburg in 1773. It is worth noting, too, that the principle of State aid was involved, for the major asylums built in this country after 1825 were to be State institutions. At this time the appeal for public support seemed logical in view of the prevailing attitude that the Government had a responsibility for poor relief since custodial institutions were likely to care for the poor. It was for this reason that by 1840 most general hospitals in the United States represented private philanthropies but that alongside them had evolved insane asylums and municipal hospitals, both of which had evolved from the concept of the almshouse. Following the example of Virginia, a list of the States providing insane asylums would include Kentucky (1824), South Carolina (1828), Virginia (second State hospital, 1828), Ohio (1830), Massachusetts (1833), New York (1836), Vermont (1836), Maine (1840), and Tennessee (1840). A few of the States continued to depend upon private hospitals for the care of the mentally ill. Generally, however, the principle was evolved by this time that it was the responsibility of the State to provide facilities for the custody, care, and treatment of the mentally ill. This pattern of governmental responsibility continues to exist to the present day. Unfortunately, the principle of providing custodial institutions for the needy poor through the almshouses persisted in the evolution of the insane asylums. Gradually this philosophy has undergone some changes so that many of the States are discarding the principle of simple custodial care and have instituted modern, up-to-date methods of treatment. The development of the intensive treatment programs, however, has been hampered by a variety of factors, including lack of facilities and personnel.

Historically the care and treatment of the mentally ill has been a public responsibility with a primary authority vested within the States and communities. The last 3 to 4 decades have seen the development of clinics for treating the less serious emotional disorders of adults and children not requiring hospitalization. A more recent development has seen the establishment of facilities in general hospitals for the early diagnosis and treatment of mental disorders. Other extraordinary changes have taken place. The mental institutions have begun to come out of their isolation—systematic after-care and supervision of patients on parole, social-work programs integrated with the treatment functions of the hospital, affiliation between mental and general hospitals and mental hospitals and medical schools for mutual advantage in the training of nurses and physicians, increasing use of clinical psychologists in hospitals and clinics, and systematic programs of inservice training for various classes of personnel.

THE MENTAL DISORDERS

By the preventive application of psychiatric knowledge, as it is acquired, mental health problems can ultimately be solved. This does not mean that mental health should operate from an ivory tower; indeed, "mental health is everybody's business." The prevention of mental disorders is a relatively new public-health field in which psychiatrists have worked in relative isolation for

too long a time. The vast amount of psychiatric morbidity is hardly recognized in the other specialties of medicine. It has been estimated that 40 percent of patients who are treated in general practice have psychiatric complications. The heart patient, who may look well but who lives under an unpredictable threat, has an important emotional life component with which he must live and his very survival may depend upon the degree of tranquility which can be brought to the problem. Any chronic disease produces conflicts and the degree of morbidity often depends more upon the individual's attitude than the disease itself. And morbidity costs money in the long run, as well as causing misery and unhappiness.

The development of new methods and techniques has already decreased morbidity in schizophrenia, manic-depression psychosis, involutional psychosis, paresis, epilepsy, and in some of the neuroses. Indeed paresis is so clearly preventable that it stands to be conquered in the foreseeable future. Like it, chronic alcoholism is preventable and there is an awakening of interest and research on the problem. One can reason with conviction that drug addiction and delinquency are also preventable.

Schizophrenia forms the hard core of chronic mental illnesses. We don't know the cause, but there are environmental factors. It strikes usually in early life and it contributes the largest group of hospitalized mental patients. Progress has been made in the treatment of schizophrenia and in providing extramural medical care, but we still cannot prevent what we don't understand.

The neurosis may be said to represent almost a way of life. Treatment methods have been improved, but it would appear that preventing the development of a neurosis should be much easier and more simple than helping an individual readjust to life after the neurosis has developed. The vast amount of neurotic illnesses and morbidity cannot be estimated, but we can recognize early signs and unhealthy environmental factors in the development of the neurotic pattern of life. Present knowledge is not being generally applied. Existing knowledge usually runs far ahead of application. Our knowledge is far from complete, and the number of trained personnel to apply present knowledge is inadequate.

Mental disorders of the senium have increased rather alarmingly, due largely to increase in longevity. There are social, environmental, and economic factors in precipitating a mental break in many of these old people, and early medical care can salvage many of them. Here again the lag in the application of existing knowledge is sometimes amazing. For example, we know that if an aged person lives alone, perhaps cloistered, prepares his own meals which he eats alone and has little or no social life, his early failure in adjustment, both physically and mentally, is predictable. Hospital utilization is on the increase in all spheres, partly because of the increase in the number of aged persons.

The group of intellectually subnormal citizens represents a most neglected field. Some States do not have special facilities for them either in public schools or in institutions. The educable should be given an opportunity to develop fully his potential abilities and the trainable should have the benefit of improved habit control. Even an idiot can learn to improve his habits which decreases the burden of the mother or of an institution. Between 1 and 2 percent of our population is mentally deficient. We know that this can be reduced by simple methods such as preventing birth injuries and other mechanical trauma, controlling rubella in the prospective mother and early attention to blood incompatibilties of mother and child. The association of convulsive disorders is common in this group; progress is being made and several large State institutions for epileptics have been discontinued.

THE PREVENTION OF MENTAL ILLNESS AND THE PROMOTION OF MENTAL HEALTH

The prevention of mental illness is a goal that is sought to reduce human suffering and national economic loss. As is true in the instance of many other medical problems such as cancer, heart disease, poliomyelitis, and others, the means of prevention are not yet at hand for all the mental illnesses. The cause and necessary understanding have been established for the prevention of general paresis and the psychosis associated with pellagra, a vitamin-deficiency disease. Certain infectious diseases frequently lead to brain damage with permanent changes in the personality and when the prevention of these diseases has been established, so will the brain damage and mental illnesses in these instances be prevented.

Mental illness that is, to the best of our present knowledge, psychological in development and origin is best prevented by early diagnosis and treatment. The greater knowledge needed to discover latent or less obvious mental illness and predict with accuracy the future development of mental illness before it is apparent awaits new discoveries that must come from research.

The prevention of the further progress of a mental illness, if unrecognized or untreated, must be met by trained professional personnel who are skilled in diagnosis and treatment. These individuals can make broader contributions by conveying their knowledge either as a consultant in research or in teaching. This leads greater recognition and prevention of mental illness by physicians, parents, teachers, workers in children's agencies, and others.

The increased emphasis on psychiatry and related fields in the teaching of all physicians prepares them to be better able to recognize early manifestations of personality disorders. They are those able to initiate corrective procedures in mental disorders and to refer to the special agencies or specialists in mental health those with more severe illnesses for early care and treatment.

Rehabilitation in the field of mental illness has only recently received attention. The concept of a comprehensive rehabilitation program, first developed in the area of physical illness, offers hope as another means to prevent further disability as a result of mental illness.

The promotion of mental health is a goal that is in part reached by the prevention and the treatment of mental illness. Through the knowledge attained from work with the mentally ill, much has ben learned of those factors that contribute to mental health. The main preoccupation of scientists in this field has been wtih the cause and treatment of illness. It is important to learn more of what contributes to the development of a healthy person (not just the absence of disease) as well as what contributes to a sick personality. Through continued research and training of professional people will come the means for advancement toward the goals of preventing mental illness and promoting mental health.

DIAGNOSIS, TREATMENT AND REHABILITATION

The principal requisite in our knowledge of mental disorders is an accurate definition and classification of the separate disease processes. It is the basis for our scientific psychiatry. Without an index there would not be a starting point for the treatment of the separate psychiatric disorders or for instituting further investigation. Diagnosis is essential before treatment procedures can be instituted. However, classification in psychiatry is still incomplete and uneven. For instance, we have an exact body of information regarding general paresis, while our information regarding schizophrenia and the manic-depressive psychoses is still incomplete. While accuracy of diagnosis is essential in the treatment of the individual mental disorder, proper classification is extremely essential to a better understanding of epidemiology—the natural history and extent of mental diseases. At the present time, aside from persons who are confined to mental institutions, our information regarding the size and extent of the problem of mental disorders is inexact and incomplete. This represents an area for exploration in the immediate future.

In the treatment of mental disorders a variety of methods and techniques are employed. These range from the chemical therapies, on the one hand, through the shock therapies and psychosurgery to psychotherapy, on the other hand. In addition, nonspecific techniques such as occupational and recreational therapy, music, and bibliotherapy are employed in the treatment of mental disorders. Play therapy is effective in the treatment of the emotional disorders of children. The patient is encouraged to be an active participant in a wide range of activities, the so-called total push therapy, designed to restore him to a useful and meaningful way of living. This is in contrast to the older methods, some of which are still too prevalent, of providing simple custodial care without any attempts at treatment. The overcrowding of our hospitals and the lack of professional personnel still prevent us from providing modern advanced methods of treatment to all persons suffering from mental disease.

It is only recently that isolated attempts to rehabilitate the mentally ill have been tried. Rehabilitation has been defined as an attempt to restore the handicapped person to the fullest mental, emotional, social, economic, and personality usefulness of which he is capable. Some hospitals have instituted programs of such a nature and continue to assist and provide support for the individual after his discharge from the hospital in order to help him in a more successful and useful adaptation in the community to which he returns. Techniques of rehabilitation also represent an area for exploration in the near future.

SIZE AND COST OF THE PROBLEM

Intelligent planning for an integrated public-health attack on mental disorders demands adequate epidemiological information. A variety of facts is needed. What is the extent of the problem—that is, how many are affected? What are the characteristics of the mentally ill as a group and as compared to the rest of the population with respect to such factors as age, sex, race, and occupation? How does mental illness develop in the individual and what factors explain its distribution in the population? What are the psychological, physiological, and socioeconomic factors that may be related to cause and course of the illness?

There is a wide gap between the facts that we have now and those that we need to have. Indeed, to answer any one of the above questions requires a major research effort. Let us consider what is needed to make a statement on the prevalence of mental illness, that is, the number of mentally ill persons as of a specified interval of time. First, we need a definition of whom we are to count—who are the mentally ill? Second, we need techniques for detecting cases. For mental disorders this is not a simple matter. We are not dealing with a single entity but with a broad variety of disorders characterized generally by abnormal patterns of behavior. Some are due to known organic etiological factors, such as syphilitic infection, cerebral arteriosclerosis, alcohol intoxication, brain trauma, or convulsive disorders; others are of psychogenic origin or without clearly defined physical cause or structural change in the brain, such as the schizophrenic and manic-depressive psychoses, the psychoneuroses, the psychosomatic disorders, and a broad group of personality disorders.

Although mental disorders are sometimes considered as chronic illnesses, many have acute and reversible phases. Thus, in addition to defining the types of abnormal behavior we wish to find, we must also specify whether we are looking for individuals who have exhibited such behavior at any time in their lives, or only during some specified period of time. Even if we were to agree on whom to count, we still have the problem of devising standard methods for case finding and diagnosis needed for separating the population into those who have a mental disorder and those who do not.

Despite difficulties of definition and case finding, estimates have been made of the extent of the problem of mental disorders. As will become apparent from the statement that follows, these data have many shortcomings. Nevertheless, it will also become apparent that they all point to a single fact—mental disorders are a major cause of illness and disability in the Nation.

Community surveys of prevalence

At least 6 percent of the total population, 9,000,000 people, suffer from a serious mental disorder. This estimate is based on the findings of two widely quoted surveys: One done in the eastern health district of Baltimore, Md., by Lemkau, Tietze, and Cooper,[1] and the other in Williamson County, Tenn.[2] Although these surveys are not entirely comparable,[3] these findings make it clear that in both surveys persons with psychotic disorders—the illnesses which for the most part require mental-hospital care—constitute only 10 percent of the cases found. Disorders classified as psychoneuroses and personality disorders of adults and children accounted for the large bulk of all cases. Some idea of the distribution of various mental disorders in the population can be obtained from tables 1 and 2 which present the results of the two case-finding surveys.

Selective Service data

A second widely cited source of prevalence data is the World War II experience of the Selective Service System. Selective Service records, as is well known, show more registrants rejected for mental and personality defects than for any other cause. Of 4.8 million rejections up to August 1, 1945, 18 percent were due to these disorders. Additional data come from studies on prevalence of medical defects made on a carefully selected sample of registrants between the ages of 18 and 44 years who were examined during the period 1940–43. These studies showed mental illness as the sixth most common defect among all registrants in the sample, with a prevalence rate of 55.8 per 1,000.[4] For

[1] Lemkau, P., Tietze, C., and Cooper, M., Mental Hygiene Problems in an Urban District, Mental Hygiene, volume 25 (1941), pp. 624–646; volume 26 (1942), pp. 100–119, 275–288; volume 27 (1943), pp. 279–295.

[2] Roth, W. F., and Luton, F. H., The Mental Health Program in Tennessee, I: Description of the Original Study Program; II: Statistical Report of a Psychiatric Survey in a Rural County, American Journal of Psychiatry, volume 99 (1943), pp. 662–675.

[3] Felix, R. H., and Kramer, M., Extent of the Problem of Mental Disorders, Annals of Political and Social Science, volume 286 (1953), pp. 5–14.

a variety of reasons, Selective Service prevalence rates cannot be applied to general male population age 18–44 to determine the number of such individuals with mental disorders. However, these data emphasize the large loss of manpower to the Armed Forces for which mental disorders are responsible.

Armed Forces data

Although Armed Forces experience is not applicable as a measure of mental illness prevalence in the general population, an indication of the magnitude of the problem insofar as these services are concerned is derived from the number of disability discharges because of neuropsychiatric reasons during World War II. Of 980,000 disability discharges from the Army during the period December 1941 through December 1945, 43 percent were for neuropsychiatric reasons (table 3).

Patients in mental hospitals

The most detailed data available on the mentally ill are derived from mental hospital records. These relate only to persons whose illness has been recognized and who are sufficiently ill to warrant admission into a hospital for long-term care of psychiatric disorders.

In the United States in 1950 there were 201 State, 111 county and city, 228 private hospitals for mental disease as well as the 33 VA neuropsychiatric hospitals. The persons admitted to these hospitals are those with the more serious mental diseases, primarily the psychoses. They constitute a major illness problem for the Nation because of their large numbers and the amount of care they require. The cost of their hospital care is prodigious. Combined, these hospitals spend more than $500 million annually for maintenance and care of patients.

At the end of 1950 there were 577,000 resident patients, or 3.8 per 1,000 population, in all long-term mental hospitals. About 85 percent of these patients were in State, 9 percent in Veterans' Administration, 4 percent in county and city, and about 2 percent in private hospitals.

There has been a continuous increase in the resident-patient populations of these hospitals since 1903, the earliest year for which reasonably comparable data are available, when the number of residents was only 150,000, or 1.9 per 1,000 population (table 4).

Many factors are responsible for this fourfold increase in number of patients and twofold increase in ratio of patients to general population: First, there is the possibility of a real increase in the incidence of mental illness, but this is difficult to determine; second, the fact that the population is aging means that many more people are brought into the age groups where rates of admission are the highest; third, there is a greater awareness of the problems of mental illness on the part of both the lay public and the medical profession, as well as increased public confidence in the management of these hospitals and the service they render; fourth, a considerable proportion of admissions fall into the group requiring extensive long-term care. Thus, with increasing admission rates, the absolute numbers of such patients will increase in the resident-patient population. The improvement in death rates over the years resulting from better medical care and the use of the new wonder drugs has also contributed to an increased resident population. Fifth, there has been a constant increase over the years in the availability of hospital space. However, mental hospital beds are still unequally distributed throughout the Nation, as may be seen from the variations found in the resident-patient rates of the States, ranging from about 2 per 1,000 population in New Mexico to 6 per 1,000 in New York State.

In a single year the movement of patients into and out of these hospitals is considerable. For example, as of July 1, 1949, there were 554,000 in residence and 87,000 in extramural care. In the following 12 months there were 260,000 admissions, 184,000 discharges, and 47,000 deaths. Thus, there were over 900,000 patients under the care and supervision of mental hospitals during that year.

The rate of first admissions to long-term mental hospitals has long been used as an index of the incidence of the more serious mental disorders. A sizable literature exists concerning the characteristics of such admissions, especially of those entering State mental hospitals.[4]

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[4] Malzberg, B., Social and Biological Aspects of Mental Disease, Utica, N. Y.: State Hospitals Press, 1940; Dayton, N. A., New Facts on Mental Disorders, Springfield, Ill.: Thomas, Charles C. (1940); Census of Patients in Mental Institutions, 1923–49.

In 1949 there were 104,000 first admissions to State hospitals—a rate of 71 per 100,000 population. This rate rose from a low of 2 per 100,000 for persons under 15 years of age to 76 at 25–34 years, 93 for persons 35–54 years, 97 at ages 55–64 years, and 236 at ages 65 years and over (fig. 1 and table 5).

Data on first-admission rates can also be used to show that at least 8 percent of the infants born today will spend some part of their future lifetime in a mental hospital.

Hospital data also gives us information about the kinds of disorders found in relation to age at first admission. In the age range 15–44 years, schizophrenia and manic-depressive psychoses predominate. During the next decade of life, the involutional psychoses, general paresis, and alcoholic psychoses attain considerable importance. In the sixties, psychoses with cerebral arteriosclerosis and senile psychoses assume prominence, and these mental diseases of the senium continue to rise until the end of the life span.

Of the 500,000 resident patients in our State mental hospitals, one-quarter have been hospitalized for more than 16 years, one-half for more than 8 years, and three-fourths for more than 2.5 years. This resident population consists largely of a slowly accumulated core of schizophrenic patients who are admitted during youth or early maturity and stay, in many cases, for the rest of their lives. Although admissions of senile cases have increased greatly in the last decade, they constitute a relatively small proportion of resident population because of a high death rate following admission. Thus, the median duration of hospitalization for resident patients with mental diseases of the senium, who constitute 11 percent of the resident population and 27 percent of first admissions, is 2.4 years, while that for resident schizophrenics, who constitute 47 percent of the resident population and about 22 percent of first admissions, is 10.5 years (table 6).

The problem of the increasing rate of first admissions in the population aged 65 and over is too emphasized. Since 1940 there has been no marked change in the first admission rates to State mental hospitals in the age groups under 65 years. For persons in the age groups 65 years and over the 1950 rate is 20 percent higher than the 1940 rate. This has resulted in increasing the proportion of patients in the age group 65 and over among first admissions from 20 percent in 1940 to 25 percent in 1950 (an increase of 25 percent). In the same period of time the proportion of persons in the age group 65 and over in the general population has increased from 6.9 percent in 1940 to 8.1 in 1950 (an increase of 17 percent).

Limitations of hospital data

Studies of the hospitalized population have provided us with much useful information on the frequency of various mental disorders. However, it is difficult to use hospital data to generalize about the prevalence and incidence of similar disorders in the general population. We lack a basic fact—the relationship between the number of persons hospitalized for a given disorder and the number of persons in the population with the same disorder who never reach a mental hospital. Hospitalization rates are a resultant not only of the true incidence of mental disorder but of a number of factors such as availability of mental hospital beds, public attitudes toward hospitalization, and availability and use of other community resources for diagnosis and treatment (for example, general hospitals with psychiatric treatment services, psychiatric clinics, and private psychiatrists).

A point to be emphasized is that mental hospital data present an incomplete picture of the number of people under treatment. There are at least 153 general hospitals in the country with psychiatric facilities, many of which provide not only diagnosis but also intensive treatment. In 1949 there were 128,000 patients separated from the psychiatric services of such hospitals, of whom 85,000 were discharged back to the community, 3,000 died, and 40,000 were transferred to long-term mental hospitals. More data are needed on these patients, especially those returned to the community, as well as on the large number of adults and children seen in the 1,200 psychiatric outpatient clinics in the United States.[5]

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[5] Pennell, M. Y., Cameron, D. C., and Kramer, M., Mental Health Clinic Services for Children in the United States, 1950, Public Health Reports, vol. 66 (1951), pp. 1559–1572.

Patients in institutions for mental defectives and epileptics

At the end of 1950 there were 134,123 resident patients or 89.3 per 100,000 population in institutions for mental defectives and epileptics. About 95 percent of these patients were in public institutions and 5 percent in private institutions; 84 percent or 113,185 of these residents were mental defectives and the remaining 16 percent were epileptics. Table 7 shows the increase in resident patients in such institutions from 1941 to 1950 inclusive.

Table 8 shows the estimated number of such residents in public institutions by mental disorder in 1950 and the percentage distribution of age of these resident patients.

Problems of these institutions are much different from those faced by mental hospitals since almost all of these patients face an irremediable mental handicap. The institutions' primary goals are (1) to train as many of these patients as can be trained so that they might be released to live a useful and productive life outside of the institution, within the limits of their mental activities and (2) to provide adequate and humanitarian living conditions for those whose mental handicap is so great as to require their continued institutionalization for the full span of their life.

Hospitalized patients

No systematic study has been made of the overall economic costs of mental disorders to the Nation. However, an idea of their magnitude may be obtained by considering one part of the picture, namely, the costs of hospitalization.

During 1952 the State, county, and city mental hospitals spent $490 million for care and maintenance of their patients. Although this represents a considerable expenditure of money, it must be remembered that per capita expenditures per patient are still very small. When the 48 States are ranked by the magnitude of daily per capita expenditures for maintenance and care of patients in the State, county, and city hospitals for 1952, the median expenditure is only $2.30 per patient per day.

Another large continuing expenditure of public moneys is that made by the Veterans' Administration for the care and treatment of veterans with neuropsychiatric disorders. At the end of 1952 there were 56,400 neuropsychiatric patients in Veterans' Administration hospitals. During that year the cost of care for such patients amounted to $146,565,000.[6]

The cost of taking care of the mentally ill with public funds, including maintenance of such patients in public hospitals, VA pensions, and other State and local mental health activities in 1952 amounted to $1,041 million or about $2,900,000 per day. This is about $2,000 per minute, day and night (table 9).

The hospitalized individuals and their families also suffer severe economic losses. For example, Malzberg [5] has estimated that the 9,000 male first admission to State and licensed hospitals for mental disease in New York State for 1948 will lose a total of about 75,000 working hours (8.3 years per patient), equivalent to a loss in net future earnings of about $90 million, or $10,000 per patient. The 9,400 female first admissions will lose an estimated total of 77,000 working years (8.2 years per patient), equivalent to a loss in net future earnings of about $42 million, or $4,400 per patient.

Aside from humanitarian reasons, one of the most cogent factors which motivates research in a given health field is the desire to rehabilitate disabled individuals so that they may return to their proper places in society and become effective units in our economic system once more. Data available on new cases of cancer and on first admissions to long-term mental hospitals in 1947 show strikingly that mental illness affects to a much greater degree than cancer those individuals in the productive years of life. Some 34 percent of first reported cancer cases fall within the age range of 15–54 years as compared to 63 percent of first admissions to long-term mental hospitals. When comparison is made of male patients only, the disparity becomes even greater. Some 27 percent of male new cancer cases are 15–54 years of age upon diagnosis while 61 percent of male mental patients are admitted in this age range. This means a far greater amount of disability is caused by mental disease in the wage-producing years than by cancer.

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[6] Reports and Statistics Service, Division of Medicine and Surgery, Veterans' Administration.

Mental hospitals

Expenditures. The per capita maintenance expenditure for State mental hospitals in 1950 was $772.67 as compared to $719.30 in 1949 and $659.13 in 1948. There was considerable interstate variation reflecting in part geographical and fiscal year variation in the general price level and, in part, variations in the type and adequacy of care provided. The degree to which hospitals were self-supporting by the production of their farms and their varying needs for such items as fuel, light, and water were also reflected in their per capita maintenance expenditures. For the country as a whole, about 61 percent of the State mental hospital maintenance dollar was spent for salaries and wages, 19 percent for purchased provisions, 6 percent for fuel, light, and water, and 14 percent for other items of maintenance. Here, also, there was considerable variation between States in the relative expenditures for various maintenance items. For example, 71 percent of New York's maintenance dollar was spent for salaries and wages while only 36 percent of Tennessee's dollar was spent for the same purpose. In 1948, for the country as a whole, 55 cents of each maintenance dollar went for salaries and wages, in 1949 it was 58 cents, and in 1950, as mentioned above, it was 61 cents. When annual per capita maintenance expenditures are compared for the State mental hospitals, county and city mental hospitals, and psychopathic hospitals for 1950, the psychopathic hospitals have a figure, $4,248, which is about 5.5 times that of the State mental hospitals, $772, and 5.3 times that of the county and city mental hospitals, $792.

Institutionalized persons

Improvement in standards of care and training in institutions for mental defectives and epileptics requires increased funds. Table 10 shows for the years 1940, 1945, and 1950, the total expenditures for the reporting public institutions, total maintenance expenditures, expenditures for salaries and wages and per capita maintenance expense with the relative percent increases for each of the categories listed and the percentage that salaries and wages are of total maintenance expenditures.

During 1950 the public institutions for mental defectives and epileptics spent about $92 million for care and maintenance of their patients. This indicated an average annual per capita expenditure of $745.60 or $2.04 per patient per day.

Public assistance to patient and for family

According to the Bureau of Public Assistance of the Social Security Administration, a study was made in 1951 of the aid to permanently and totally disabled. At that time the total caseload was 93,000. Eleven percent of the cases were comprised of mentally ill and defective persons as follows:

	Percent
Schizophrenic	1.1
Manic-depressive	.4
Psychoses of known origin	.6
Other psychoses, not specified	.5
Mentally deficient	6.5
Severe psychoneurotic	1.9
Total	11.0

If it is assumed that the 1953 total caseload of 173,000 is similar in composition to that in 1951, then there are 19,030 persons with mental illness or defect receiving such public assistance which amounts to about $880,000 per month.

A study is currently being made of recipients of old-age assistance. About 2 percent or roughly 50,000 of such recipients are considered to require considerable care due to a mental condition.

Trend of admissions of patients with psychosis associated with pellagra and with meningoencephalitis

The effect on the trend of admissions to mental hospitals once the etiology of a psychosis is determined and effective ways of preventing and treating it are worked out can be illustrated for two disorders, psychosis with pellagra and general paresis.

In South Carolina the first admission rate for psychosis with pellagra was at a peak value of about 3 per 100,000 population during the period 1922–24 and this disorder accounted for about 8 percent of all first admissions. Today an admission for this disorder is a rarity (table 11).

The first admission rate to State mental hospitals for patients with general paresis has also shown considerable decline. Between 1926 and 1945 the first admission rate for this psychosis was at a level of 4 to 5 per 100,000 and paretics constituted about 7 to 8 percent of all first admissions. Since 1945 there has been a consistent decrease in these first admissions until now the rate is about 2.4 per 100,000 and paretics constitute only 3½ percent of all first admissions. Table 12 shows the decreases in these first admission rates specific for age. There have been considerable decreases in the first admission rates in practically all of the age groups. In the age groups 35–44 and 45–54 where we get the peak first admission rates for this disorder, the first admission rate is now about one-half of what it was in 1933.

Follow-up studies on cohorts of admissions to and discharges from mental hospitals

The concept of the mental hospital merely as a place of custody is no longer acceptable. To make these hospitals effective in their modern role, we must learn more about the patient, what happens to him in the hospital, and what happens to him upon his return to the community.

Mental hospital populations constitute an ideal group to which to apply life-table methods for decreasing their hospital experience. They consist of large groups of patients hospitalized for periods of time varying from a few days to many years. Their dates of admission to and separation from the hospital (either alive or dead) are known along with other data that are routinely reported such as sex, race, birth date, diagnosis, types of therapy. Despite the availability of these kinds of data, there have been very few studies designed to answer such questions as: Of patients admitted in a given year, what proportion remain in the hospital, are on convalescent care, discharged, or dead within 6 months, 1, 2, or 3 years following admission? How are discharge and death rates related to diagnosis, sex, race, age at admission, therapy, and other relevant factors?

To illustrate how useful the cohort method of analysis is in determining what has been happening to patients in mental hospitals over a long period of time, an attempt was made to answer the question, "What is the current experience of patients during the first year following admission in terms of the percent remaining in the hospital, out of the hospital, or dead, within the 12-month period following their admission? How does the current experience compare with that of some earlier period?"

The mental-hospital systems of 7 States were asked to follow each patient admitted for the first time in 1948 for a full 12-month period and to determine at the end of that time how many, by diagnosis, were still in the hospital, out of the hospital, or dead. "Out of the hospital" was defined as release to convalescent care or direct discharge, whichever came first. A similar set of data were found for patients admitted for the first time to New York State civil hospital system in 1914. It is believed that these data provide a reliable base line for comparison because of the outstanding quality of care the New York State hospitals have always provided. Table 13 compares the combined experience for 7 States with that of New York State in 1914. It is realized that such comparisons are rather hazardous to make, especially when rates are unadjusted for age, sex, comparability of diagnoses, and many other factors. Unfortunately more refined statistical data are unavailable so that it was not even possible to compare even one State in this series with itself over a long period of time. Nevertheless it is felt that this particular illustration is worth while to indicate the importance of life-table methods in the study of mental-hospital populations.

The data in table 13 suggest that there have been important changes in the hospital experience of different types of mentally ill patients during their first year of hospitalization. To name only a few, the proportion of schizophrenic patients out of the hospital within 12 months is now 56 percent, as compared to 33 percent in 1914. The proportion of involutional psychotics out of the hospital has increased from 35 to 70 percent and there has been a striking decrease in death rate from about 22.5 percent to 4 percent. On the other hand, many more patients with mental diseases of the senium (42 percent as against 27 percent) are in the hospital at the end of the first year, a result of the striking decrease in mortality rate (from 56 to 42 percent) among such patients. These findings are generally in accord with the experience of most mental-hospital administrators.

This table emphasizes that a mental hospital provides care for people with a variety of disorders, each of which has its own prognosis. It also emphasizes

the need for carefully planned studies of the life, histories of mental-hospital patients designed to show the effects of changes in patterns of treatment and care on eventual outcome.

In this connection it is important also to follow up patients released from the hospital. On a nationwide basis we have only the crudest data about discharged patients. We need information such as the following:

Of patients who have been discharged, how many relapse and how soon? How are relapse rates related to diagnosis, sex, age on admission, length of hospitalization, therapy? Furthermore, we should like to know what social and environmental factors encountered by discharged patients are related to relapse or successful readjustment. Followup studies of patients discharged from tuberculosis sanatoriums have proven very profitable in our understanding of that disease. There is no reason to suppose that such studies would be less valuable in the study of mental illness. Accurate followup data on discharged mental patients can serve as the basis for discharge prediction techniques, weighting significant factors in the patient's life history, diagnosis, clinical course in hospital, degree of improvement, and expected family and community environment. Furthermore, better understanding of relapse factors would greatly aid the development of rehabilitation programs for patients, while they are still in the hospital and later when they have returned to the community.

Studies of admission rates

As our mental-health programs develop and, hopefully, as research turns up methods for preventing and controlling mental disorders, indexes will be needed to determine whether the incidence, prevalence, and course of specific mental disorders has been altered. As has been pointed out, first admission rates, long regarded as an incidence index for the psychoses, have been used to answer questions on whether there has been an increase or decrease in the incidence of specific disorders.

Such studies, however, no matter how carefully done, suffer from the limitation that the relationship existing between the number of persons hospitalized for a given disorder and the number of persons in the population with the same disorder who never reach a mental hospital is not known. Hospitalization rates are a resultant of the incidence of mental disorder and a series of factors that determine the number of persons who are eventually admitted to mental hospitals, such as: Availability of mental hospital beds, availability and usage of other community resources for diagnosis and treatment of mental disorder (for example, general hospitals with psychiatric-treatment services, psychiatric clinics and private psychiatrists), and public attitudes toward hospitalization. Thus, to understand more fully the distribution and course of mental illness in the population it is necessary to study hospitalization rates in relation to these factors. The solution to this problem is difficult since it is dependent primarily upon development of practical case-finding methods and standardized diagnostic procedures for detecting various mental diseases in the general population.

A project in this category is in progress in Syracuse, N. Y., under the direction of Dr. Ernest M. Gruenberg of the New York State Mental Health Commission (4). This study deals specifically with psychoses associated with the aging process. These disorders are a serious problem for the mental hospitals, since the rates of admission have been increasing continuously over the years until now they constitute close to 30 percent of first admissions. A major objective of the Syracuse project is development of case-finding methods for detecting uphospitalized persons with senile psychoses, and relating this number of cases to the number of cases actually committed. Relationships between the hospitalized and nonhospitalized senile cases will be studied according to various social and economic factors. A further step will be the development of clinical and preventive services in the community to learn what effect adequate services can have on reducing the incidence of mental illness among the older residents. The starting point for this study is the records of the admissions of residents of Onondaga County to New York State civil and licensed mental hospitals for the period 1935–44.

Additional studies of this type are needed, taking as their starting point other major mental disorders.

Other epidemiological studies

A number of epidemiological research projects have been started in recent years.

Among the most interesting are the following studies:

The Stirling County project, under the direction of Dr. Alexander H. Leighton of Cornell University, is an intensive study of a county in Nova Scotia. Its major purpose is to explore relations between the distribution of psychiatric illness and sociocultural factors, particularly the stresses in the social environment. This research is divided into three operations. One consists of case-finding and case studies of all types of mental disorder by a psychiatric team. Extensive data are being gathered on possible or actual psychiatric cases from a variety of sources. Data are being obtained on persons hospitalized in mental and general hospital for psychosis, severe psychoneurosis, or psychosomatic complaints. A clinic has been set up to examine patients referred by physicians, clergymen, schools, police, unemployment insurance offices, and health, welfare, and other local agencies. These data will be studied to determine various ways in which to define and classify cases. The second operation is the development of screening tests applicable to the general population which will serve as a check on the completeness of other case-finding methods. The third operation is being carried out by a social-science team which is doing a study of sociocultural patterns and mapping various types of social stress in the community. To eliminate the effect of biases and preconceptions, the team doing the case-findings is working independently of the one mapping sociocultural factors. The two series of data will be merged and correlated to determine existing relationships.

The Yale project is the joint endeavor of a psychiatrist and a sociologist. Its directors are two Yale faculty members, Dr. F. C. Redlich and Dr. A. B. Hollingshead, who are investigating interrelations between social structure and mental illness. They have taken a census to determine the persons in a metropolitan area receiving psychiatric treatment, that is, persons in mental hospitals, attending mental hygiene clinics, or under private psychiatric care. Each patient was classified into 1 of 5 social strata. Correlations will be sought between an individual's position in the social structure of the community and the types of treated mental illness found. In addition the attitudes of persons in the various social strata toward mental illness and psychiatry will be studied, as well as the types of psychiatric treatment they obtain, and their clinical response to various treatment methods.

These and other current research projects such as that of Dr. Erich Lindemann at Wellesley, Mass., and that of Dr. T. A. C. Rennie in the Yorkville area of Manhattan, will undoubtedly provide much useful information relating to the cause and course of mental disorder in the population and to the development of psychiatric services to meet realistically the needs of the population.

TABLE 1.—*Active cases of mental disorder in the Baltimore survey for the year 1936 (population: 55,129)*

Leading classification	Number of cases	Rate per 1,000	Leading classification	Number of cases	Rate per 1,000
Psychosis	367	6.7	Behavior disorder in children	449	8.1
Schizophrenia	158	2.9	Neurotic traits	162	2.9
Manic-depressive	41	.7	Conduct problems	287	5.2
Senile and arteriosclerotic	38	.7			
Alcoholic	15	.3	Minor and possible disorder in adults and children	651	11.8
Syphilitic	29	.5	Epilepsy	75	1.4
With mental deficiency	28	.5	Mental deficiency	375	6.8
Other [1]	27	.5	School progress problems without mental deficiency	434	7.9
Undiagnosed	31	.6	Adult delinquency without other information	567	10.3
Psychoneurosis	171	3.1			
Psychopathic personality	30	.5			
Personality disorder in adults	218	4.0	Total active cases [2]	3,337	60.5
Psychotic traits	26	.5			
Neurotic traits	60	1.1			
Psychopathic traits	13	.2			
Behavior deviation	119	2.2			

[1] Involutional, with epilepsy, posttraumatic, and deliria not due to alcohol.
[2] Actixe+inactive cases: 3,416=62.0 per 1,000.

Source: Lemkau, Tietze, and Cooper: A Survey of Statistical Studies on the Prevalence and Incidence of Mental Disorder in Sample Populations. Public Health Reports, vol. 56, p. 11, table 3.

TABLE 2.—*Active and inactive cases of mental disorder in the Williamson County, Tenn., survey as of Sept. 1, 1938 (population: 24,804)*

Primary diagnosis	Number of cases			Rate per 1,000 (total cases)
	Active	Inactive	Total	
Psychosis	121	35	156	6.3
Schizophrenia	(1)	(1)	43	1.7
Affective	(1)	(1)	41	1.7
Senile	(1)	(1)	23	.9
With mental	(1)	(1)	15	.6
Other [2]	(1)	(1)	24	1.0
Undiagnosed	(1)	(1)	10	.4
Psychoneurosis	89	10	99	4.0
Conduct and behavior disorder	285	129	414	16.7
Psychopathic traits	152	34	186	7.5
Special personality traits	208	127	335	13.5
Mental deficiency	19	184	203	8.2
Organic and miscellaneous conditions	40	288	328	13.2
All types	914	807	1,721	69.4

[1] Specific types of psychoses were not broken down by whether the case was inactive or active.
[2] General paresis, other organic states, posttraumatic, with alcoholism, and with epilepsy.

Source: Lemkau, Tietz, and Cooper: A Survey of Statistical Studies on the Prevalence and Incidence of Mental Disorder in Sample Populations. Public Health Reports, vol. 58, p. 12, table 4.

TABLE 3.—*Number of disability discharges of enlisted men from the Army, Dec. 7, 1941, through December 1945*

Cause of discharges	Number	Percent	Cause of discharges	Number	Percent
Neuropsychiatric reasons	419,500	42.8	Result of traumatisms	54,500	5.6
Bones and organs of locomotion	114,000	11.6	Genitourinary diseases	17,000	1.7
Infectious diseases	88,000	9.0	Tuberculosis	17,000	1.7
Gastrointestinal diseases	71,000	7.2	Venereal diseases	7,000	.7
Eye, ear, nose, and throat	67,000	6.8	Unclassified	6,000	.6
Cardiovascular diseases	62,500	6.4			
Respiratory diseases (excluding TB)	56,500	5.8	Total	980,000	100.0

Source: Army Service Forces, Office of the Surgeon General, Medical Statistics Division.

TABLE 4.—*Resident patients at end of year in hospitals for the prolonged care of psychiatric patients, by type of control of hospital, and rates per 100,000 population, United States, 1941–50*

Year	Resident patients at end of year					Percent of total [1]				Rate [2]	
	Total	State hospitals	Veterans' hospitals [3]	County and city hospitals	Private hospitals	State hospitals	Veterans' hospitals	County and city hospitals	Private hospitals	Total	State hospitals
1950	577,246	489,930	51,553	21,687	14,076	84.9	8.9	3.8	2.4	384.3	362.2
1949	564,160	478,003	52,380	[4] 19,859	13,918	84.7	9.3	3.5	2.5	382.5	324.0
1948	554,454	469,500	52,619	[4] 19,240	13,095	84.7	9.5	3.5	2.4	381.6	323.1
1947	540,987	452,464	52,505	23,643	12,375	83.6	9.7	4.4	2.3	379.2	317.2
1946	529,247	445,561	48,235	23,150	12,301	84.2	9.1	4.4	2.3	382.4	321.9
1945	518,018	438,864	42,204	23,850	13,100	84.7	8.1	4.6	2.5	371.1	344.3
1944	506,346	434,209	38,623	21,259	12,255	85.8	7.6	4.2	2.4	366.7	343.2
1943	500,564	430,958	35,953	21,297	12,356	86.1	7.2	4.3	2.5	366.7	338.2
1942	497,938	432,550	32,348	21,256	11,784	86.9	6.5	4.3	2.4	369.8	330.5
1941	490,506	417,315	30,443	31,812	10,936	85.1	6.2	6.5	2.2	368.2	317.2

[1] Percents may not add to 100 because of rounding.
[2] Number of resident patients per 100,000 of the estimated population as of July 1 of the specified year. Base for total rate, years 1941–45, is total population. Base for all other rates is civilian population.
[3] Veterans' hospital data for the period 1941 through 1945 referred primarily to patients in VA neuropsychiatric hospitals. In 1946 and 1947, the data included patients in all types of VA hospitals and in other Federal hospitals. In 1948 through 1950, coverage was reduced somewhat to eliminate duplicate counting by excluding VA patients in other Federal hospitals. The bulk of these patients were in St. Elizabeths Hospital, Washington, D. C., and are therefore included in data for State hospitals.
[4] Excludes patients in Iowa county homes. Also 1 hospital was transferred from city-State auspices in 1948.

TABLE 5.—*Rate of first admissions to State hospitals for mental disease by age and mental disorder, 1949*

Mental disorders	First admissions		Rate per 100,000 population of specified age [1]							Median age at admission (years)
				Age (in years)						
	Number	Percent distribution	All ages	Under 15	15–24	25–34	35–44	45–54	55–64	65 and over	
All patients	104,365	100.0	70.8	2.3	49.4	76.3	94.2	91.6	96.8	236.1	47.1
With psychoses	85,193	81.6	57.8	.9	36.7	57.4	68.2	71.1	84.0	228.7	50.6
Syphilitic	4,561	4.4	3.1	(2)	.4	1.7	6.8	8.2	6.3	3.4	47.6
Alcoholic	5,381	5.2	3.6	(2)	.6	3.6	8.2	9.3	6.5	2.2	45.2
With mental diseases of the senium	28,109	26.9	19.1	.....	(2)	.1	.4	4.0	30.6	205.0	65+
Involutional	4,781	4.6	3.2	.....	(2)	.1	2.9	12.9	12.4	2.2	52.9
Manic-depressive	6,056	5.8	4.1	(2)	2.3	5.9	8.6	7.5	6.0	2.6	41.5
Schizophrenic	23,662	22.7	16.0	.4	24.8	35.7	28.7	15.3	7.7	2.2	32.6
With mental deficiency	2,513	2.4	1.7	.1	3.3	3.0	2.5	1.8	1.1	.4	31.9
Undiagnosed and unknown	10,130	9.7	6.9	.2	5.3	7.3	10.1	12.2	13.2	10.6	45.1
Psychoneurosis	4,401	4.2	3.0	.1	2.8	5.8	5.6	4.0	3.1	1.3	36.8
All other mental disorders	14,771	14.2	10.0	1.4	9.7	13.1	20.3	16.5	9.7	6.1	39.0
Epilepsy	432	.4	.3	.1	.6	.5	.4	.3	.1	(2)	29.5
Mental deficiency	1,428	1.4	1.0	.5	2.4	1.4	1.0	.6	.5	.2	25.1
Alcoholism	7,516	7.2	5.1	(2)	.8	5.9	14.2	11.6	6.1	1.8	42.5
Other, and unclassified	5,395	5.2	3.7	.8	6.0	5.3	4.8	3.9	2.9	4.1	33.7

[1] Estimated civilian population as of July 1, 1949. Source: Series P–25, No. 39, Department of Commerce, Bureau of Census.
[2] Less than 0.05. Source: Census of Patients in Mental Institutions, 1949, Public Health Service Publication No. 233, Washington: Government Printing Office, 1952.

FIRST ADMISSION RATES FOR SELECTED DIAGNOSES, BY AGE, TO STATE HOSPITALS FOR MENTAL DISEASE UNITED STATES, 1949

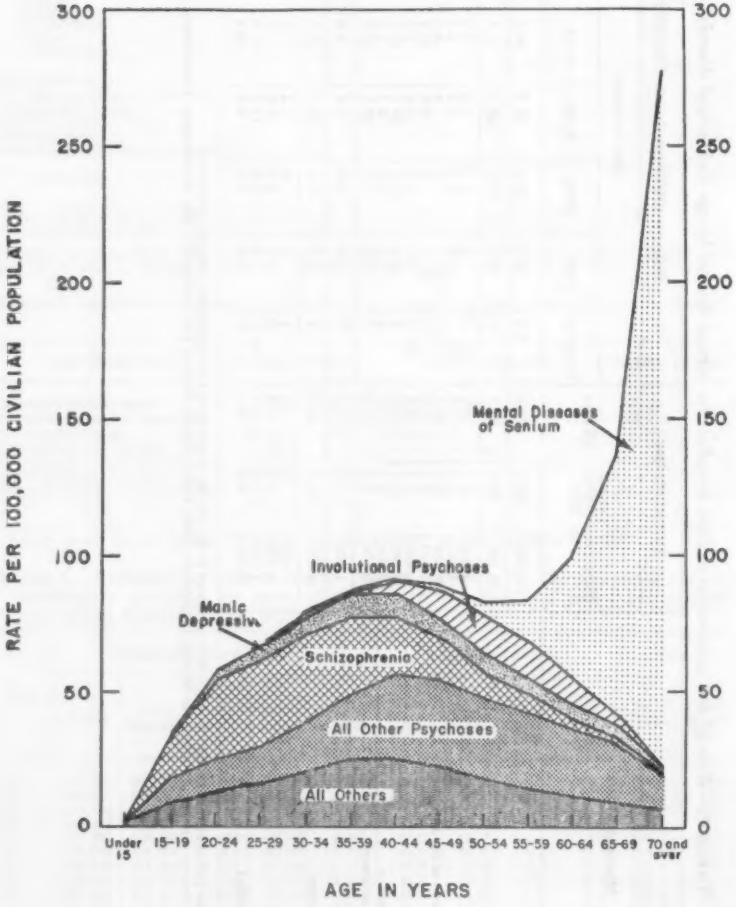

FIGURE 1

TABLE 6.—*Percent distributions of length of stay of all resident patients at end of year in State hospitals for mental disorder, by mental disorder—Selected States,*[1] *1950*

Mental disorder	Total resident patients	Total	Percent distribution of length of stay (in years)					Median (in years)	Mean (in years)
			Under 1	1–4	5–9	10–14	15 and over		
Total	128,982	100.0	14.2	25.5	17.5	14.4	28.4	7.9	11.1
All psychoses	120,584	100.0	13.0	25.7	17.7	14.7	29.0	8.2	11.3
Syphilitic	9,109	100.0	10.1	29.0	24.5	18.6	17.8	7.2	9.2
Alcoholic	3,279	100.0	21.3	28.3	16.6	11.6	22.1	5.1	9.2
Mental diseases of the senium	14,249	100.0	26.9	48.4	14.7	6.3	3.8	2.4	4.1
Involutional	3,720	100.0	22.4	30.1	21.3	13.9	12.3	4.5	7.1
Manic-depressive	10,574	100.0	11.1	17.8	16.5	15.2	39.4	11.5	13.9
Schizophrenic	61,201	100.0	10.0	21.5	17.1	15.8	35.6	10.5	13.1
With mental deficiency	6,770	100.0	7.0	20.0	18.4	17.2	37.4	11.3	13.6
Other diagnosed and unknown	11,682	100.0	14.1	25.6	18.6	14.9	26.8	7.8	10.7
Psychoneurosis	1,345	100.0	33.7	23.5	14.0	11.5	17.3	3.5	7.3
All other mental disorders	7,053	100.0	30.7	22.7	14.7	10.9	21.0	4.2	8.4
Epilepsy	288	100.0	18.7	29.9	18.7	11.5	21.2	5.4	8.8
Mental deficiency	3,472	100.0	7.8	21.2	19.6	16.6	34.9	10.4	13.0
Alcoholism	1,598	100.0	69.7	18.5	3.7	2.9	5.2	0.3	2.5
Other and unclassified	1,695	100.0	42.8	28.7	14.2	6.7	7.7	1.8	4.7

[1] Data available from California, Louisiana, Michigan, Nebraska, Ohio, Pennsylvania, and Virginia. (Ohio does not include receiving hospitals.)

TABLE 7.—*Resident patients at end of year in institutions for mental defectives and epileptics, by type of control of institution and rates per 100,000 civilian population, United States, 1941–50*

Year	Resident patients at end of year			Percent of total		Rate [1]	
	Total	Public institutions	Private institutions	Public institutions	Private institutions	Total	Public institutions
1950	134,123	127,425	6,698	95.0	5.0	89.3	84.8
1949	131,795	125,152	6,643	95.0	5.0	89.3	84.8
1948	126,907	120,804	6,103	95.2	4.8	87.4	83.2
1947	124,164	118,072	6,092	95.1	4.9	87.1	82.8
1946	118,263	112,566	5,697	95.2	4.8	85.5	81.3
1945	118,075	112,523	5,552	95.3	4.7	92.6	88.2
1944	117,412	111,642	5,770	95.1	4.9	92.7	88.1
1943	111,413	105,765	5,648	94.9	5.1	87.4	83.0
1942	112,980	107,936	5,044	95.5	4.5	86.3	82.4
1941	103,698	100,027	3,671	96.5	3.5	78.8	76.0

[1] Number of resident patients per 100,000 estimated civilian population as of July 1 of the specified year.

TABLE 8.—*Percent distribution of mental defective resident patient population at end of year in public institutions for mental defectives and epileptics, by mental status and age, 1950*

Mental status	Total	Percent distribution				
		Under 10	10–19	20–29	30–39	40 and over
Total	107,094	7.7	27.5	25.6	17.6	21.6
Idiot	22,965	13.7	28.8	25.5	16.7	15.2
Imbecile	46,934	6.5	22.2	25.4	19.6	26.3
Moron	30,481	3.6	33.8	26.6	15.9	20.1
Unclassified	6,714	14.5	32.5	22.1	13.6	17.4

TABLE 9.—*Cost of taking care of the mentally ill with public funds, United States: 1950–52*

	1950	1951	1952
Grand total	$892,813,000	$989,586,000	$1,041,007,000
Veterans' Administration [1]			
Total	480,911,000	492,098,000	523,621,000
Hospital:			
Inpatients	121,000,000	126,600,000	146,565,000
Outpatients	1,300,000	1,253,000	1,224,000
Service-connected disabilities—compensation:			
World War I	56,286,000	55,144,000	53,472,000
World War II	255,098,000	253,696,000	252,827,000
Spanish-American War	184,000	189,000	170,000
Regular Establishment	10,142,000	11,011,000	11,244,000
Veterans with service on or after June 27, 1950 (Public Law 28, 82d Cong.)		108,000	4,439,000
Non-service-connected disabilities pensions:			
World War I	29,175,000	34,239,000	41,617,000
World War II	7,726,000	9,858,000	11,998,000
Veterans with service on or after June 27, 1950 (Public Law 28, 82d Cong.)			67,000
Non-Federal public hospitals and activities:			
Total	411,902,000	497,488,000	517,386,000
State mental hospitals [2]	371,399,000	453,409,000	464,834,000
City and county mental hospitals [2]	13,181,000	13,756,000	18,459,000
Psychopathic hospitals [2]	3,789,000	4,168,000	5,035,000
Other State and local mental health activities [3]	23,533,000	26,155,000	29,058,000
Cost per day of all care	2,446,063	2,711,195	2,852,073

[1] Source: Annual Reports, Administrator of Veterans' Affairs, 1950 and 1951, Washington, D. C. and unpublished data for the 1952 Annual Report.

[2] Source: Data for State mental hospitals, city and county mental hospitals from unpublished data of 1950 and 1951 annual censuses of mental patients, National Institute of Mental Health, Bethesda, Md. 1952 data were estimated.

[3] Source: The Mental Health Programs of the 48 States published in 1950 by the Council of State Governments, Chicago, Ill. 1952 data were estimated.

TABLE 10.—*Selected expenditure data and statistics with percent changes, public institutions for mental defectives and epileptics, United States, 1940, 1945, and 1950*

Item	Amount			Percent change	
	1940	1945	1950	1940–45	1945–50
Total expenditures	$33,077,259	$44,098,440	$106,358,294	33.3	141.2
Total per capita maintenance expenditure	$291	$386	$746	32.6	93.1
Total maintenance	$27,961,023	$42,726,769	$91,821,934	52.8	114.9
Salaries and wages	$14,814,327	$23,295,631	$55,082,172	57.3	136.4
Percent salaries and wages of total maintenance	53.0	54.5	60.0	2.8	10.1
Average daily resident patient population	96,042	110,660	123,152	15.2	11.3

Source: 1940: Table 111 on page 161, Patients in Mental Institutions, 1940, Bureau of Census, average daily resident patient equals combination of tables 112, 113, and 114. 1945: Table 78 on page 198 of Patients in Mental Institutions, 1945, Bureau of Census. 1950: Table 75—Expenditures and per capita maintenance expenditures of public institutions for mental defectives and epileptics, United States, 1950.

TABLE 11.—*Psychosis with pellagra, rate per 100,000 civilian population and as percent of all diagnoses to the South Carolina State hospital, for selected years*

Year	Number		Rate per 100,000 population [1]		Percent pellagara cases of all diagnoses	
	First admissions	Resident patients	First admissions	Resident patients	First admissions	Resident patients
1920	19	24	1.13	1.43	2.97	1.09
1922	49	28	2.88	1.64	7.55	1.17
1923	57	35	3.35	2.06	8.05	1.45
1924	50	27	2.93	1.58	7.01	1.07
1933	43	84	2.45	4.80	5.14	2.43
1935	27	29	1.53	1.64	3.99	.81
1940	14	11	.74	.58	1.34	.24
1941	21	20	1.12	1.07	2.07	.43
1942	12	9	.65	.48	1.23	.19
1943	5	6	.28	.34	.53	.13
1944	2	2	.11	.11	.20	.04
1945	4	4	.22	.22	.36	.08
1946	0	1	0.	.05	0.	.02
1947	1	1	.05	.05	.08	.02
1948	1	1	.05	.05	.07	.02

[1] Population sources: 1920, 1922-24—Statistical Abstract of the United States, 1933 Bureau of the Census; 1933 and 1935—Population Special Reports, Series P-45, No. 4, Bureau of the Census; 1940-48—Population Estimates, Series P-25, No. 47, Bureau of the Census.

TABLE 12.—*First admissions with general paresis to State hospitals for mental disease, United States, for selected years*

Year	All ages [1]	Under 20 years	20-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65 years and over
	Number							
1933	5,861	53	84	962	1,878	1,637	679	256
1937	6,003	81	97	1,047	2,048	1,632	785	258
1940	6,012	63	93	1,004	2,113	1,523	862	315
1943	5,884	81	97	851	2,106	1,458	932	343
1946	5,367	76	72	588	1,536	1,579	842	345
1949	3,641	35	44	297	1,148	1,138	662	294
Total, all years	32,768	389	487	4,749	11,129	8,967	4,762	1,811
Percent distribution	100.0	1.2	1.5	14.5	34.0	27.4	14.5	5.5
	Rate per 100,000 civilian population							
1933	4.7	0.1	0.8	4.9	10.7	12.0	7.3	3.5
1937	4.7	.2	.9	5.1	11.5	11.0	7.7	3.1
1940	4.6	.1	.8	4.7	11.5	9.8	8.1	3.5
1943	4.4	.2	.9	4.0	11.2	9.1	8.1	3.6
1946	3.8	.2	.6	2.6	9.3	9.5	6.8	3.3
1949	2.4	.1	.4	1.3	5.4	6.6	5.0	2.4
	Percent change in 1st admissions rate (1933 used as the base year)							
1933								
1937	−.0	+100.0	+12.5	+4.1	+7.5	−8.3	+5.5	−11.4
1940	−2.1	0	0	−4.1	+7.5	−18.3	+11.0	0
1943	−6.4	+100.0	+12.5	−18.4	+4.7	−24.2	+11.0	+2.9
1946	−19.1	+100.0	−25.0	−46.9	−13.1	−20.8	−6.8	−5.7
1949	−48.9	0	−80.0	−73.5	−49.5	−45.0	−31.5	−31.4

[1] Individual figures will not add to total due to omission of unknown age group.

Sources: Patients in Mental Institutions, 1933, 1937, 1940, 1943, 1946; 1949 from unpublished data. Population Special Reports, Bureau of the Census. Series P-45, No. 5; series P-47, No. 3; series PC-7, No. 1.

TABLE 13.—*Comparison of patient years[1] of care needed within 1st year of admission, by selected diagnosis in 1914[2] and in 1948,[3] and estimate of savings for 1st admissions to State hospitals, United States: 1948*

Diagnosis	Percent						Patient-years of care per 100 first admissions needed within first year following admission			First admissions to all State hospitals, 1948	Net changes[4] in patient-years of care needed within first year, State hospitals, 1948	Net gain or loss[5] in cost of maintenance during first year
	Remaining in hospital		On trial visit or discharged		Died							
	1914	1948	1914	1948	1914	1948	1914	1948	Difference			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(7)−(8)	(10)	(11)=(9)×(10)÷100	(12)=(11)×$659
Schizophrenia	65.5	41.4	33.0	56.3	1.5	2.3	82.8	70.7	12.1	19,429	2,350.9	$1,549,548.72
Involutional psychosis	42.5	25.5	35.0	70.4	22.5	4.1	71.3	62.8	8.5	4,220	358.7	236,429.93
Alcoholic psychosis	27.0	24.9	67.0	70.4	6.0	4.7	63.5	62.5	1.0	4,650	46.5	30,649.55
Psychosis with mental deficiency	46.5	44.1	47.0	51.5	6.5	4.4	73.3	72.1	1.2	2,396	28.8	18,982.94
Manic-depressive psychosis	20.0	21.4	70.0	75.0	10.0	3.6	60.0	60.7	−.7	5,662	−39.6	−26,101.55
Syphilitic psychosis	35.0	42.6	23.8	36.8	41.2	20.6	67.5	71.3	−3.8	4,817	−183.0	−120,620.79
Mental diseases of the senium[6]	26.5	41.8	18.0	16.5	55.5	41.7	63.3	70.9	−7.6	26,050	−1,979.8	−1,304,945.57
All others[7]	36.0	38.0	37.3	43.0	26.7	19.0	68.0	69.0	1.0	33,994	339.9	224,038.29

[1] Patients discharged or dying were each credited with one-half patient-year.

[2] Results based on data from New York civil State hospitals reported by H. Pollock, Mental Disease and Social Welfare, pp. 156–169.

[3] Results based on unpublished data submitted by Arkansas, California, Louisiana, Michigan, Nebraska, Ohio, and Virginia.

[4] Where 1914 patient-years needed exceeds that of 1948, the result is positive; it is negative where 1948 patient-years exceed that of 1914.

[5] Based on a per capita maintenance cost in State hospitals in the United States in 1948 of $659.13.

[6] Includes psychosis with cerebral arteriosclerosis and senile psychosis.

[7] The conservative assumption has been made that percents remaining in hospital, on trial visit, or discharged, and died from the above 7 selected psychoses apply to some 17,000 psychotic first admissions with other or undiagnosed conditions and to some 17,000 nonpsychotic first admissions.

THE PROGRESS OF RESEARCH ON MENTAL ILLNESS

It is hardly necessary at the present time to justify continued and expanded research in medical problems. The contributions of research are too numerous to mention, and the lifesaving results of fundamental research as seen in the discovery of insulin, the treatment of pernicious anemia, the causes and treatment of a wide variety of infectious diseases, the discovery of the sulfa drugs and such antibiotics as penicillin, streptomycin, and aureomycin need no further emphasis.

The field of mental disease is probably the most complicated and obscure problem which medical science faces today. In spite of this, however, appreciable strides have been made in the conquest of mental disease, attributable directly to fundamental and clinical research.

Through the middle ages and down to modern times general paresis was a disease as obscure as and probably comparable in importance to the problem of schizophrenia. In every country this disease drained a large share of valuable manpower from the community, filled the wards of the mental hospitals, and created permanent mental cripples who continued to tax society for their care and keep throughout the remainder of their lives.

In 1822 it was demonstrated that paresis was an organic brain disease. It was nearly a hundred years later when Noguchi and Moore, in 1913, established the fact that general paresis was caused by a syphilitic infection of the brain. A few years before, Wasserman's discovery of the serological test for syphilis made it possible to diagnose paresis, and Ehrlich's discovery of arsenical drugs made possible a more effective treatment for it.

Then Wagner-Jauregg discovered the fever therapy for paresis, which demonstrated that this mental disease was curable. More recently the discovery of penicillin has added to the armamentarium against this disease and practically completed its conquest. Whereas previously 10 percent of individuals who contracted syphilis might eventually become the victims of paresis, present results show that less than 3 percent of those who receive modern therapy will develop this complication. The use of newly introduced therapeutic agents will cut this figure to even lower levels. Thus it is safe to say that paresis can be exterminated in this generation, and today it is difficult to find a typical case of this very serious mental illness for presentation to medical students.

The savings in the cost of the care of paretics alone, not to mention their loss to society, will repay a hundredfold the investment which was made in the research which discovered the etiology and treatment of this disease.

A similar achievement has been accomplished in the case of pellagra. Spies has estimated that 10 percent of the inmates of mental institutions in the southern parts of this country were formerly there as a result of this disease. These patients were suffering from a mental disease of unknown cause and with no known cure. In 1927 Goldberger of the United States Public Health Service, and Sebrell, the present director of the National Institutes of Health, reported the epoch-making studies in this disease and demonstrated that pellagra was a specific deficiency disease caused by the lack of vitamin nicotinic acid in the diet. This disease is now completely preventable and its effective treatment is remarkably simple and safe. Thus another obscure and very costly mental disease has succumbed to scientific investigation.

There are less dramatic but equally promising areas where progress has already been made as the result of research in mental diseases. Formerly the epilepsies caused a large number of mental diseases and behavior disorders, which are being brought under control by medical research. In 1853 bromides and in 1912 phenobarbital were demonstrated to have anticonvulsant properties. More recently more effective anticonvulsants have been discovered, such as dilantin, tridione, and mesantoin. Some epilepsies that have proven resistant to drug therapy have yielded to brain surgery and in some cases to psychotherapy. The development of the electroencephalograph by Berger in 1929 for the recording of electrical activity in the brain has made possible the diagnosis of many of the epilepsies and the determination of the correct treatment.

Although mental deficiency is an area still largely resistant to medical research, it has been shown that some of the types can be prevented. Susceptible mothers must not be exposed to German measles during the first 3 months of pregnancy or the child may be defective. Total transfusions of the newborn prevent the mental deficiencies due to erythroblastosis fetalis or an incompatible Rh factor in the blood of the mother and infant.

Recent studies have demonstrated that the serious mental aberrations of senility, a condition of increasing importance as medical progress in other fields prolongs the life of our population, may be the result in part of a deficient circulation to the brain on the basis of arteriosclerotic changes in the cerebral vessels. There is also considerable evidence that these psychoses of the senium may have a social as well as a physiological basis. The finding that many well-adjusted and productive older persons were shown by autopsy to have undergone physiological deterioration comparable to that found among senile and arteriosclerotic psychotics suggests that it is the combination of such deterioration with loss of status and of a real meaning of life which accounts for this mental illness. Thus major advances have been made in our understanding of the etiology of this important condition and research directed at the nature of both the social and the physiological changes promises to yield prolific returns in the mental health of our aging population.

Recent years have seen the rapid development of psychosomatic medicine. Medical science now clearly recognizes the importance of mental and emotional states in the causation of many diseases of obscure etiology. Gastric ulcers, hypertension, colitis, asthma, to mention only a few, are all recognized today to have in their etiology, and probably playing the most important role, basic mental mechanisms. Research supported by grants from the National Institute of Mental Health has yielded evidence of correlation between personality structure and arthritis; of the effect of emotional tension on the severity of diabetes; and has contributed further knowledge about the influence of psychological factors in colitis, skin diseases, and asthma. Emotional factors are no less influential in children's illnesses than in adults, as has been shown by several studies concentrating on children's psychosomatic disorders.

The length of hospital stay of patients with involutional psychoses (middle age depression) has been materially shortened by the use of the shock therapies. With proper care and treatment the bulk of such patients are now regarded as curable within less than a year.

Despite these recent advances in the diagnosis and treatment of several varieties of mental illness, there remain hundreds of thousands of seriously ill patients in hospitals and millions of less seriously ill outside of hospitals for whose illnesses the causes are still obscure. Included in these groups are the functional psychoses (schizophrenia, manic-depressive psychosis, etc.), the psychoneuroses, and other disorders of behavior. No single cause, whether genetic, physiological, psychological, or social in nature, has been found to explain satisfactorily the development of any one disorder, but the search for causes is being carried out on a wide front in both the intramural research program and the research grants program.

Biological studies

In the past decade a number of important advances have been made contributing to a better understanding of the nervous system and the nature of mental disease. Some of these are in the nature of basic accomplishments leading to a better understanding of how the brain operates without any direct or immediate application to mental disease as such, although it is well recognized that the final answers to the cause, prevention and treatment of mental disease will rest firmly upon the basic understanding of the normal thinking process.

A number of recent advances can be grouped under the general heading of technical developments, that is, the discovery or elaboration of new methods for studying the nervous system. A new technique is an important contribution since by means of it, entire new fields are opened up and occasionally new sciences may develop as did the science of bacteriology following the discovery of the microscope. Among the important technical discoveries in the past 10 years have been the application of infrared, ultraviolet, X-ray, and electron microscopy to nervous tissue. These means of observing living structures by means of radiation more specific and analytical than that possible with ordinary light will open new areas of understanding of the structure of the nervous system. Another technical advance is in the development of techniques for the measurement of the circulation and metabolism of the living human brain in health and disease. This technique has yielded information on the nature of the senile psychoses, on the circulatory and metabolic effects of various organic cerebral diseases, and has been used to measure the effectiveness of a number of drugs and surgical procedures designed to increase the nutrition of the brain. It has been used to study the metabolic derangement accompanying sleep, anesthesia, and coma, and opens up the possibility of investigating the metabolism of the living brain in various congenital and acquired mental abnormalities.

The electroencephalograph or EEG now enjoys a well-deserved place in the diagnosis and study of many diseases of the nervous system. It has recently been possible, however, so to refine these techniques as to record the electrical activity of single cells in the brain and spinal cord.

This development, much of which has been accomplished in the intramural program of the National Institute of Mental Health, promises to yield important information on the relationships between individual nerve cells and the manner in which they function to produce integrated behavior. Not only has the EEG been tremendously refined in the delicacy of its examination, but its results have also been greatly improved by recent techniques of portraying as if on a television screen the spatial patterns of electrical activity over the surface of the brain. This is already contributing important information on functions of the cerebral cortex so intimately bound up with the basis for normal and abnormal thinking.

An important area of research accomplishment in recent years has been in the greater understanding of the relationship between the mind and body as exemplified by discoveries showing the physiological basis of emotional states and of psychosomatic disease. A number of different groups and discoveries have contributed to this accomplishment. Important pathways have been discovered connecting the nervous system with the endocrine system and between the higher areas in the brain and those which regulate the vegetative functions of the body so that it is now possible to trace a sequence of events between some mental process and an emotional state or a pathologic process in a remote organ. Besides contributing to an understanding of the causes of many psychosomatic diseases, such studies will prove of significance eventually in the detection and treatment of the emotional disturbances which accompany many forms of mental illness.

In the field of schizophrenia, the costliest of all illnesses and one which has thus far successfully evaded our comprehension of its cause, numerous recent accomplishments show important and promising leads. Recent work has indicated that in this disease the blood and oxygen supplied to the brain are normal in amount, thus establishing that schizophrenia is not caused by an anoxia of the brain. By stimulation of certain specific areas of the brain in animals it is possible now to produce reactions which resemble those of schizophrenia to a remarkable degree. Drugs have recently been prepared which, when administered in infinitesimal doses, will produce in normal subjects a transient state indistinguishable in many respects from that of schizophrenia. This does not imply that schizophrenia is the result of some toxic substance. It does, however, help to pinpoint the biochemical or physiological sites where the manifestations of schizophrenia may reside. Recent studies, under both the intramural and extramural programs, have brought to light important relationships between the endocrine system, especially the adrenal glands, and schizophrenia. It has been found in the schizophrenic individual that these glands are incapable of responding normally in various test situations, and that in this type of mental disease there is an abnormality in the type of hormones produced by this gland. Although it has not been proved that such defects are the cause of schizophrenia, this finding of an important association between the adrenal and other endocrine glands with schizophrenia is a significant contribution to the diagnosis and treatment of that disease.

Social and cultural factors in mental illness

Conclusive evidence is lacking as to whether the tensions and stresses of everyday life are significant factors in the production of psychoses or serve simply as precipitating factors. Research conducted among populations with widely divergent ways of life has shown some variations in the types of mental illness found and tremendous variation in the activities which the mentally ill perform. However, no society has been found from which mental illness (or in particular, schizophrenia) was wholly absent. Within contemporary America, the incidence of hospitalized schizophrenia is much higher among lower income groups than among upper income groups. Further, recent research conducted under NIMH grants has indicated that patients from lower income groups are much more likely to experience prolonged hospitalization for schizophrenia. A major unanswered question has been whether schizophrenics are, in part, produced by the way of life found in the social settings from which they are hospitalized or whether they drift into such settings by virtue of preexisting personality deviations. A series of epidemiological projects, designed to answer this question and other related questions, is now under way in New York City, New Haven, and

several smaller communities. Several are being supported by National Institute of Mental Health research grants and one is a part of the intramural research program.

Research on the social epidemiology of mental illness requires the combined efforts of psychiatrists and social scientists. An important part of the stimulation of such research has been the promotion of closer relationships among disciplines, sought in part by the sponsoring of a series of work conferences on mental health research by the National Institute of Mental Health.

Research on the availability of treatment services to various segments of the population has been supported by research grants and also carried out intramurally. A study conducted in New Haven has indicated marked differentials between the types of therapy received by psychotics of relatively well-to-do segments of the population and those drawn from working-class groups, a fact which may in part explain the much poorer prognosis of the working-class schizophrenic. Similar differentials are found to obtain also for services provided through community mental-hygiene clinics, even though the clinic may make no charge for treatment. These findings reflect not only the greater ability of the well to do to pay for treatment services but much greater awareness of the services available and readiness to utilize them. A large-scale study of public attitudes toward and information about mental illness has been conducted under a special National Institute of Mental Health grant to provide a more adequate basis for public-information programs. This study conclusively demonstrates that only a small fraction of the population of the United States is now prepared to recognize the signs and symptoms of mental illness unless the patient appears to be violent or threatening.

Within the past 5 years, research by a grantee on the patterning of patient-staff and intrastaff relationships within mental hospitals has suggested that staff disagreements can markedly interfere with the progress in therapy of the mental patient. Currently under way is the experimental testing of the effect upon treatment success of reorganization of the mental-hospital ward to achieve maximally therapeutic relationships. Research is also continuing on the ways in which the treatment process prepares the patient to take a useful place in society after his hospitalization. In this connection, a major intramural project investigates the impact of mental illness upon the family of the patient and the ways in which the family and patient work out plans and arrangements for his place in the community after hospitalization. These projects represent the most thorough efforts to date to study this highly complex problem.

The substantial increase in drug addiction by adolescents and young adults following World War II appears to represent to a considerable degree the product of social and cultural factors, with drug use one symptom of the tensions and insecurities to which the groups in question are subjected. Use of addicting drugs is not found to any appreciable degree among population groups which are well integrated into the larger community. Research, now under way, examining the early-life experience and social contacts of the drug user and of the young person from the same environment who does not use drugs should produce a much clearer picture of the significant factors making for adolescent addiction.

Psychological studies

Evidence for the role of psychological factors in the development of mental illness has come from many studies, and is further supported by the clinical experience of psychiatrists, psychologists, and others. The fact that psychotherapy has produced improvement or cure in many patients is itself testimony to the importance of psychological factors in etiology. Since most of the evidence points to the important influence of early childhood emotional deprivations and other types of traumatic experience on emotional adjustment and mental health, much of psychological research has concentrated on the processes of child development. Many projects supported by grants have studied child development from birth on, including development not only of the nervous system and other aspects of physical growth, but also emotional growth and the development of relationships with parents, brothers and sisters, and others. At the same time clinical studies of pre-school-age children with severe mental illness have helped to isolate the pathological relationships which appear to be important factors in the origin of these illnesses. One study supported by a grant has shown that certain types of adult mental illness can be detected as abnormal adjustment during childhood, but that other types, such as manic-depressive psychosis, develop in patients who had apparently normal childhoods.

The implications of such findings for preventive work with children are clear, if further research supports these tentative conclusions.

In order to understand the deviant behavior of the neurotic or psychotic patient, it is necessary to understand the laws governing normal behavior. Particularly important here are the processes of attention, thinking, perception, motivation, and emotion which are so frequently distorted in the mentally ill. Recent studies have shown the great distortions in perception which can be brought about experimentally through variations in the needs or motives of normal persons, and the effect of experimentally induced anxiety on learning. There is no psychological process which remains unaffected by great frustration, emotion, or motivational conflict. Illumination on some of these problems has come from studies of animals, whose motives can be manipulated much more easily experimentally than is desirable or possible with human beings.

Further light on psychological factors in mental illness, and on the complex interrelationships of psychological and physiological processes, has come from the very suggestive research on experimental neurosis. When an animal is subjected to a severe conflict between motives, such as hunger and fear, or is frustrated by being compelled to try to solve an almost unsolvable discrimination problem, he exhibits distinct abnormal behavior that appears similar to human neurosis. Such disturbed behavior—extreme nervousness, refusal to eat, isolation from other animals—may persist for months or years unless careful retraining and special therapeutic procedures are applied. Much has been learned concerning this analogue of mental illness, and much remains to be learned about the mechanisms by which experience affects physiological processes and the body's biochemistry, and these latter in turn affect behavior.

The process known as psychotherapy is now undoubtedly the most widely used therapy in the treatment of mental illness and emotional maladjustment. It is the almost exclusive treatment for the neuroses and for the emotional maladjustments of children, and it has recently been shown that schizophrenia can be successfully treated by prolonged and intensive psychotherapy. A number of research grant projects are investigating the process to determine reasons for its successes and failures, and to evaluate the extent of its usefulness in different types of illness. A recent development is group psychotherapy, in which a group of 5 to 10 patients under the leadership of a trained group therapist discuss one another's problems and promote the improvement of each. Several grant projects have already contributed new techniques for analysis of group interaction and new criteria for determining which patients can profit most from group therapy and which from individual psychotherapy.

Finally, mention should be made of the continuing efforts to develop improved methods, through interview, psychological tests, or behavior observation, of techniques for more accurate diagnosis of mental illness. Few patients show exactly the same symptom pattern or personality structure, and detailed diagnostic information is necessary for effective treatment planning. Improvements have been made through the research grants program in a number of psychological tests, and the studies aimed at developing highly valid and reliable diagnostic instruments are continuing.

Present needs for research

It is important that a program of research in the problems of mental disease be broad enough to encompass all of the important areas of research which may contribute to our understanding and treatment. Just as the eradication of paresis depended upon research in clinical psychiatry, in bacteriology, in pathology, and in pharmacology; and as the conquest of pellagra depended upon biochemistry and public health techniques, so will future progress in mental disease depend upon an integration of all of many disciplines quite remote from each other, each contributing an important part to the whole. We do not dare to overlook any area in which an answer or a clue to mental disease may be found, be it biochemistry, physiology, or the sciences of animal behavior or human relations.

It is possible to delineate the following general areas which appear most promising and within which research over the next several years should be developed.

Clinical investigation

There is need for an exhaustive study of the epidemiology of mental disease to determine where the different diseases occur, what is their incidence, and with what geographic and environmental characteristics they are associated. Research of this nature in other types of disease has frequently elucidated causes

previously obscure. In addition, this knowledge is essential for proper assessment of the value of various preventive techniques in the field of mental health.

Research must be undertaken which is directed toward better diagnostic criteria for the various mental diseases, toward the clarification of the bounds of normalcy, and the refinement of observations. This would include accurate scientific observation and recording, describing, and measuring the clinical manifestations of behavior, research in the pathological, physiology, and biochemistry of the individual diseases and a search for new tests applicable to the population as a whole for the purpose of predicting the occurrence of mental disease at a time when therapy would be more efficacious.

Much remains to be learned of the important relationships between the mind and the body including both the psychosomatic illnesses and the psychological problems of physical diseases, such as blindness, amputations, poliomyelitis, and heart disease and the problems of rehabilitation of the physically handicapped. The mental and emotional background of many medical diseases must be further probed.

An extremely important problem is the evaluation of current therapeutic and prophylactic procedures and the development of new and better ones. This Nation is spending great amounts of money as individuals and through their Government on techniques of therapy which appear most promising. These techniques remain to be better evaluated so that more accurate definitions can be reached in a search for the best therapy for each particular disease. Modifications of existing therapeutic procedures must be encouraged and tested and new psychological procedures and drugs devised and tested.

Biological, chemical, and psychological research

Much remains to be learned from the physical and chemical structure of the central nervous system and we are now at the threshold of great advances in these fields, for the tools with which to attack these problems are now available. Electron microscopy, infrared, and ultraviolet spectroscopy have only recently been applied to the brain. These studies must be encouraged and expanded.

Techniques are available to elucidate the enzymatic structures of the brain, to find what enzyme systems occur, in what parts of the brain they predominate, and to establish their function. The metabolism and blood flow of the living human brain is now accessible for study by newer techniques. These studies must now be pursued in an effort to define the normal and abnormal patterns of energy exchange in the brain, to develop and test new drugs which may affect the biochemical processes of discrete parts of the living brain. Studies must be made upon the circulation of the brain in the various diseases of that organ, such as arteriosclerosis, which play such an important role in the mental changes in senility.

Great progress has been made in recent years in our understanding of the functional role of hitherto obscure areas of the brain. The role of the cerebral cortex, the thalamus, and hypothalamus are becoming clearer with every year. These studies and those on metabolism and structure must be directed at a greater understanding of the brain in a search for the causes of those mental diseases which have their origins in the chemical or physical structure of the brain. But the sciences which treat the brain as a whole and in relation to the outside world must not be neglected.

The sciences of behavior, human and experimental psychology, offer promise for a better understanding of the mental processes involved in neuroses and psychoses and a means of testing therapeutic results. Studies of the learning process and of infant and child behavior patterns and how these are influenced by parental attitudes must be part of a well integrated program.

The role of disturbances in behavior development, such as the effect of maternal deprivation (as in prolonged illness and hospitalization) or of maternal overprotection and their relation to behavior disorders, juvenile delinquency, and mental disease needs clarification. The role of interpersonal relationships such as the influence of the family, of one's associates, the educational process, etc., upon normal and abnormal behavior must all be evaluated.

The effect of the group upon the child, and of the child upon the group, and how groups integrate must be further studied. Neither can the brain which is so largely influenced by the external world be scientifically divorced from research in these fields, for in this interpersonal environment may well lie the answer to many problems of mental disease.

Although no one can guarantee specific results in research, one can guarantee, however, that these lines of investigations will result in a better understanding

of the brain and mental processes and that without research in mental disease progress in therapy will come to a halt. The answer to schizophrenia, for example, may come from a wholly unexpected source. It is much more likely, however, to come from some of the lines of investigation delineated above.

RESOURCES AND SERVICES NOW PROVIDED

Mental hospitals

Hospital services for the mentally ill include psychiatric wards in general hospitals, small specialized public and private hospitals, larger State and Federal hospitals, facilities for patients with mental deficiency, epilepsy, and residential treatment facilities for children. About 725,000 of the 1,500,000 beds in registered hospitals are for patients with mental disorders. These hospitals are overcrowded and understaffed. About 70 percent of the hospitals report that the number of patients exceeds the normal capacity by at least 20 percent. Many of the buildings were built 75 to 100 years ago and some are firetraps. Very few of the hospitals have adequate staffs. There is a great shortagge of physicians, nurses, social workers, psychologists, and trained nonprofessional staff. This means that many hospitals are custodial institutions unable to utilize modern treatment and rehabilitation methods. In spite of these shortcomings, the effectiveness of hospital treatment has improved in the past decade so that more patients are discharged and the length of hospital stay has been shortened. A study by Barton and Tompkins has shown that 60 percent of patients admitted were out of the hospital by the end of the year, 20 percent were dead, and 20 percent were still in the hospital. The Veterans' Administration hospitals discharge 70 percent of their patients within 6 months of the date of admission. In the recent past action has been taken by many States to make hospital treatment more effective and, therefore, to reduce the cost per patient. The American Psychiatric Association and the Public Health Service of the Department of Health, Education, and Welfare have provided consultation service on administration, staffing, and physical facilities. At the request of State governors and heads of State departments, the National Institute of Mental Health has studied the facilities of 87 hospitals in 17 States during the past 5 years. The reports of these surveys have been utilized as the basis for legislative action and for hospital improvements. The Council of State Governments made a thorough study of the mental health programs of the 48 States and has published a volume that contains recommendations for improvement of hospital programs. These recommendations include the following:

"Hospital space for the care and treatment of the mentally ill is an evident and urgent need in most States. Overcrowding is the most extensive problem in State hospitals today. To the extent possible and feasible, adequate hospital space should be provided promptly.

"A large part of medical and scientific equipment and other therapeutic facilities are antiquated. Modern equipment and facilities should be provided.

"There is a countrywide shortage of psychiatrists, psychiatric nurses, psychiatric social workers, psychologists, and other professional personnel in our State hospitals. Attendants (phychiatric aides)—of immense importance in the care and treatment of the mentally ill—in many instances are carelessly selected, inadequately trained, and insufficiently paid. More professional personnel should be provided in most State hospitals, and special attention should be given to the selection, training, and compensation of attendants.

"Children, like others, have mental sickness. It is possible in the case of children to deal with problems early and effectively. Such problems, if left undealt with, often result in protracted and expensive mental illness. Studies should be made in all States of psychiatric needs for the observation, care, and treament of children; statewide programs should be devised to deal adequately with this problem; and such programs should coordinate and use extensively the services of social and child welfare agencies, health agencies, schools, and churches.

"There are special groups of people who often are cared for in State hospitals. These include persons with mental deficiency, with convulsive disorders, with chronic alcoholism or other drug addiction, or with persistent sex deviation. All of these groups require special kinds of treatment. Studies should be made and plans developed and put into operation for the care and treatment of special categories."

Mental hospitals—Staffing

Administrative staff.—The adequacy of care received by patients in any hospital largely depends upon the relationship between the number and type of well-trained personnel and the number of patients under care. This relationship may be crudely expressed in terms of the average number of patients served by each full-time employee. The variation from hospital to hospital, however, in the number of employees not directly associated with patient care, such as farm workers, etc., would affect the meaningfulness of such ratios. As a matter of interest, it should be noted that for the country as a whole, the ratio mentioned above was 5.2 patients per employee in 1948, 4.8 in 1949, and 4.5 in 1950, indicating a general overall improvement. However, this ratio of patients to total employees is not as meaningful as the ratio of patients to employees of specific occupational groups. Thus, hospitals really tending to fulfill a therapeutic function may differ markedly in their patient-physician ratio from those where the major emphasis appears to be on custody.

In psychopathic hospitals where the emphasis is on short-term intensive therapy the ratio of patients to physicians was 8.7, in State mental hospitals the ratio was 241.4, and in county and city mental hospitals it was 262.7.

Based on 1941 American Psychiatric Association standards of 1 physician per 100 admissions (excluding transfers) and 1 physician per 200 resident patients at end of year, for the country as a whole the need for full-time physicians in State mental hospitals was about 52 percent met. This may be compared to 47 percent in 1949 and 44 percent in 1948. There was considerable variation in 1950 among the States, ranking from 1 State with no physicians on the staff to 2 States where the need was more than met. Similar figures for graduate nurses based on suggested American Psychiatric Association standards of 1 graduate nurse to every 25 average daily resident patients showed in 1950 that the need was about 24 percent met as compared to 23 percent in 1949 and 21 percent in 1948. In 1950 only 13 of the 48 States and the District of Columbia have their nursing needs met to a degree greater than the country as a whole, indicating a distribution that is heavily weighted at the lower end. When State, county and city, and psychopathic hospitals are compared with respect to the ratio of average resident patients to graduate nurses, the same picture shown for physicians emerges; that is, in psychopathic hospitals the ratio is 3.9, in State mental hospitals it is 104.9, and in county and city hospitals it is 138.8. With respect to social workers in State mental hospitals the needs for the country as a whole were 23 percent met in 1950, using the standard of 1 psychiatric social worker for every 80 annual admissions and 1 worker for every 60 in convalescent status or family care as recommended by the psychiatric social work committee of the American Psychiatric Association. This 1950 countrywide average was practically identical with that in 1948. However, some progress is evident from the fact that in both 1948 and 1949 there were seven States that had no social workers in their State mental hospitals. In 1950 this number had been reduced to five.

In 1950 the needs for attendants for the country as a whole, based on standard of 1 attendant for every 6 average daily resident patients in State mental hospitals were about 74 percent met as compared to 71 percent in 1949. The ratio of average resident patients to attendants in such hospitals in 1950 was 8.2 compared to similar ratios in 1949 and 1948 of 8.4 and 9.5 respectively, thus indicating some improvement. In 1950, the ratio of average resident patients to attendants in psychopathic hospitals was 2.9, in State mental hospitals 8.2, and in county and city hospitals, 9.3.

Psychiatrists in private practice

Until the last 25 years, almost no psychiatrists were in private practice so that treatment by trained specialists was available only to patients in institutions. A recent study published by Dr. Daniel Blain, of the American Psychiatric Association, showed that over 4,000 are now in private practice. The services of psychiatrists are not available to many people because of the shortage of psychiatrists and because almost 3,000 are in the cities of over 100,000 population. The shortage of psychiatrists and other medical specialists results from a number of factors. The number of graduates from medical schools is limited by the facilities available for training physicians. After finishing 8 years of college, medical school, and internship, the physician has to make a choice between beginning his practice and taking 3 additional years of training. In the past 6 years, assistance in the form of stipends for psychiartic trainees under the National Mental Health Act has helped increase the number of physicians enter-

ing this specialty. It has been estimated that psychiatrists in private practice treat about 800,000 patients per year for mental disorders of all types. Some have an office practice and some combine this with hospital practice or service to industry, to schools and courts, and many have teaching positions in medical schools. Improvements in the teaching of psychiatry to medical students in the past 10 years have prepared the physician, who is not a specialist in psychiatry, to more adequately treat patients with less severe mental disorders.

Mental health community services—State level

Since 1773, States have assumed responsibility for care of the mentally ill who required hospitalization. It has been only within the past 10 years that all States have developed departments for the promotion of mental health and the prevention of mental illness. At the State level, 19 States have a full-time staff consisting of 1 or more each of the following: Psychiatrist, clinical psychologist, psychiatric social worker, and, in a few States, a mental health nurse. Seventeen States have two full-time staff members, 13 States have only one professional staff member at State level, and 4 States have only part-time personnel.

The responsibility for administration of the community mental health program lies with the health department in 32 States, a separate department of mental hygiene in 9 States, the department of welfare in 6 States, and other agencies in 6 States.

In its role of consultation and leadership, the State mental health staff provides in-service training and sets standards for professional personnel and assists local communities in the development of mental health programs. The programs which have been developed vary from State to State both in magnitude and character. There are, however, many common elements. Educational activities are directed toward the general public to establish a better understanding of mental illness. Training programs about mental health and mental illness are conducted for professional personnel who have contact with large numbers of the population in their daily work, such as teachers, ministers, lawyers, physicians, nurses, and personnel in public and private agencies. Besides the programs in schools and community projects in special areas such as alcoholism, drug addiction, mental deficiency, epilepsy, aging, etc., over 1,000 clinics are in operation.

Mental health clinics

Mental health clinics are local facilities whose functions include (1) outpatient diagnoses and treatment; (2) consultation to physicians and to local agencies such as schools and courts; (3) mental health education; (4) training for mental health personnel; and (5) clinical research. These clinics are operated as separate facilities or they may be affiliated with medical schools, hospitals, courts, or schools. Some provide general services and others are specialized, treating only children or adults, or veterans, or alcoholics, or delinquents. They may be supported by private sources such as the Community Chest or by local, State, or Federal public funds. Patients treated in clinics include those whose illness does not require hospitalization, those who would require hospitalization if clinic services were not available, and those who have been discharged from hospitals. Cunningham has reported the results of a study of children treated in a clinic in 1 year and found that 66 of the children would have been placed in an institution if outpatient treatment had not been available. In addition to the human values involved, thousands of dollars of expense of institutional care were saved.

In 1952, clinic services were available in 1,154 locations in the United States. Four hundred eight-four of these clinics were open 5 days per week, and the others were part-time clinics. The total services available were equivalent to 760 full-time clinics. Since a clinic with a basic staff operating 5 days per week can provide services for not more than 100,000 people, there is a deficit of over 50 percent. It would require 840 additional full-time clinics to provide the necessary services. In 1948, there were 1,040 clinics, but only 263 were fulltime so there was a 70-percent deficit. From this it can be seen that improvement has occurred. One factor in this improvement has been the grants-in-aid to the States and consultation made possible under the National Mental Health Act of 1946. These grants have resulted in increased State and local funds for clinic services, and made possible the establishment of 200 new clinics and the provision of additional services by 200 clinics. The Council of State Governments has recommended that "outpatient clinics should be extended and other community resources developed to care for persons in need of help, but not of hospitalization."

Other activities of the State staff include special study projects to determine the mental health needs in the State and to evaluate the effectiveness of the programs in operation.

There are many reasons why the States have not been able to secure more staff to carry on their mental-health program—one of the most important being the shortage of trained personnel. Even the small number now employed have given leadership resulting in significant gains in the field of mental health for the whole Nation. This is evidenced by the number of clinics and other projects now in operation, some of which have been established without additional cost to the State; the increase in local and State funds provided for community mental health— from $2½ million in fiscal year 1948 to $11½ million in 1953—by wide citizen interest and special emphasis given mental health by the literary profession.

How did this change come about? All the factors are not known but much of it is the result of increased public interest which developed during World War II, when it was learned that 1,800,000 persons were rejected by selective service and 750,000 were discharged because of psychiatric conditions. The psychiatric facilities of the Armed Forces and the Veterans' Administration were enlarged. Vocational rehabilitation and public assistance agencies became interested in the psychiatric patient in the community. Professional and citizens associations became very active in their efforts to improve conditions in the mental-health field. Notable among these are the American Psychiatric Association, American Psychological Association, and the National Association for Mental Health. The Conference of State Governors has given special attention to mental health for the past 3 years, setting up special studies to determine the needs in States and what course of action to take in meeting these needs. Their written reports emphasize their intention of improving mental hospitals, supporting psychiatric facilities in general hospitals, community mental health clinics, training of mental health personnel, and research in the cause and prevention of mental illness. They have also emphasized the need for special community projects of a pioneering nature to coordinate and to put into operation the knowledge that is already available on maintaining mental health, the prevention of mental illness, and the rehabilitation of the mentally ill.

Within the mental-health field, 40 States and the District of Columbia are operating programs designed to deal specifically with the problem of alcoholism through public education, treatment, and rehabilitation. In many States, the alcoholic may receive treatment at a mental-health clinic, and in some States, clinics have been established for the sole purpose of treating alcoholics. State appropriations for the support of alcoholism programs vary from $250,000 a year in Connecticut to $3,000 a year in Vermont.

The National Mental Health Act of 1946 authorized funds and professional guidance to States when the interest in mental health was mounting. At that time, only 24 States had personnel for a program other than the State hospital program, and less than half this number had funds specifically designated for a community program of prevention and early treatment outside of hospitals. Federal grant funds matched by State and local funds were used to train personnel and to initiate a mental-health program under State leadership. The help of 25 trained consultants in the field of mental health were made available to the States by the Public Health Service. Working with States from the 10 regional offices, they were able to assist State mental-health agencies and State agencies administering the alcoholism programs, to initiate and conduct programs involving public and private agencies and community groups.

The immediate needs of the program are to maintain leadership in State mental-health agencies by retaining staff now on the job and to fill vacancies in departments which are understaffed by training more professional personnel. Every State needs more research personnel to assist in analyzing the mental health needs of the people and to evaluate the effectiveness of the programs now in operation to meet these needs. Every State administration is aware of the great need to improve methods of maintaining mental health and of rehabilitating the mentally ill, not only from the standpoint of reducing human suffering and conserving manpower, but also because in many States the care of the mentally ill is the first or second most costly item in the operating budget.

Mental health community services—local level

The ultimate consumer of mental health knowledge and services are the men, women, and children living in our cities, towns, and rural areas. In both urban and rural communities the needs for mental health services are distributed fairly

evenly, but the opportunities and resources for meeting such needs vary considerably.

In the past 5 years many communities with populations in excess of 100,000 have established or expanded one or more of the following kinds of mental health services: Psychiatric hospitals or psychiatric wards in general hospitals; mental-health clinics for children and adults; clinical and case consultation services in schools, courts, child-care, family, and other local agencies; public education services necessary to give widespread applications of mental health principles in families, community agencies, and industries in developing preventive practices, and alcoholism prevention and rehabilitation programs. Despite the progress made in these communities, only a few of the larger ones have all of these services, and probably none have enough of any one of these services to meet their needs.

As yet, only a few of the smaller cities and towns, and still fewer rural areas, have or have access to any of these services. So many of these latter communities are attempting to develop mental health resources that it is unusual to find any community, regardless of size, that does not feel the need of some kind of mental health service. Concern for meeting the mental health needs of communities has recently become so widespread that mental health is becoming an important public issue in more and more States and localities.

The major needs of communities in developing mental health resources are: (1) Financial; (2) personnel to provide clinical, consultation, and educational services; and (3) knowledge of current, better, and more economical ways of establishing, maintaining, and improving mental health services that have been developed in other communities or through research and are relevant to the needs of a given community.

The supply of professional mental health personnel has steadily improved over the last 5 years but remains insufficient to meet demands. Funds to employ local and State mental health personnel have also increased over the same period but not enough to compete successfully for available personnel. As a result, many communities have been unable to establish mental health services, and some have not been able to maintain such services, because of insufficient funds to engage or to retain mental health personnel.

SERVICES FOR THE MENTALLY SUBNORMAL

In the United States there are an estimated 2,400,000 mentally subnormal individuals, including an age range from infancy through adulthood. Of this number, about 5 percent are cared for in residential institutions—both public and private. Universally there are long waiting lists for admission—particularly to public institutions. The other 90 percent are living in their own communities with entirely inadequate resources for care and training.

Within the mentally subnormal group the number of mildly subnormal far exceeds that of more severe cases. Among 100 mentally subnormal persons the following proportions will be found: 75 mild, 20 moderate, and 5 severe cases. In other words, the very great majority of the subnormal are of mild grade and potentially capable of being taught to make a fairly adequate social adaptation in appropriate circumstances.

Recent studies have shown that if adequate educational, social, and vocational services are available the majority of those whose subnormality is mild will be able to find work and keep their jobs successfully, without the necessity of prolonged residential institutional care. Today it is still rare to find existing the conditions which would render it possible for subnormal children to make full use of their limited abilities and potentialities. But the problems of childhood which lead up to the difficulties in adulthood can be treated with greater prospect of success, given timely and adequate assistance.

Because of its prevalence and the high social cost imposed by mental subnormality, continued research in this field will be very valuable. Research going on at the present time has shown that certain constitutional and environmental factors causing mental subnormality can be controlled.

Needs

The need for further and expanded research into all aspects of subnormality is one that needs the strongest emphasis. There is also a great need for expansion of training resources to provide the necessary personnel, to carry on health, educational, social, and vocational services. A third need is that of field projects to explore and evaluate new approaches at providing comprehensive services on

a communitywide scale. In all of these areas the National Institute of Mental Health, together with other allied governmental, public, and private agencies, can make a major contribution, providing adequate financial resources are made available. Such expanded efforts are likely to make possible the prevention of many forms of subnormality and the improvement of greater numbers of those who are subnormal. Thus they can become less of a social and educational problem, with an ultimate reduction in costs of long-term institutional care.

Institutions for mentally subnormal—staffing

The groups of employees most concerned with the above-mentioned care and training programs would be principals and teachers. Although the number of resident mental defectives in public institutions in the United States increased 24 percent from 1940 to 1950, the number of teaching personnel increased only 9 percent during that period.

REHABILITATION SERVICES

Progress in relation to the rehabilitation of the mentally ill has been somewhat slower than in the physical rehabilitation of the handicapped. However, significant headway has been made in this regard in the past 3 years. Both the Office of Vocational Rehabilitation and the National Institute of Mental Health are vitally interested in this area of rehabilitation.

It is recognized that rehabilitation of the mentally ill can only be accomplished through a blending of services from the fields of medicine, social work, psychology, education, and employment. There is a critical shortage of trained personnel in these professional fields to cope with this problem. For example, in 1951, only 6 percent of the State hospitals met the minimum standards of the American Psychiatric Association for the number of psychiatric social workers on their staffs. It has been estimated that between 3,000 and 6,000 psychiatric social workers alone are needed in the existing psychiatric hospitals. Similar shortages exist in psychiatry, psychology and allied fields. The report of the Council of State Governments, on training and research in State mental health programs, 1953, states that, "hospitals which have adequate staffs of psychiatric social workers and are able to maintain effective family care and foster-home programs can shorten the period of hospitalization substantially for those patients who no longer need the 24-hour care of the hospital."

Efforts to develop a program for the rehabilitation of the mentally ill are making some progress despite these inadequacies. The regional mental health consultants are encouraging State and local mental health agencies and vocational rehabilitation services to place greater emphasis upon the rehabilitation of the mentally ill. Inservice training programs have been developed for vocational rehabilitation counselors, and a number of such counselors have been assigned to work with mental patients on a full-time basis. Public-health nurses and public-welfare workers are helping patients return to a productive life in their communities. For example, a pilot project to extend existing services of public-health nurses to the mentally ill is in operation in the State of Georgia. The main objective of this project is to demonstrate the feasibility of including services of the generalized public-health nurse to the mental patient and his family.

Needs

There remains much to be done in this total field. The next steps may well involve further encouragement of cooperative rehabilitation services between mental hospitals, mental-health clinics, vocational rehabilitation agencies, and other community resources, further accredited and inservice training of personnel, and field studies and investigations in such areas as foster home care and supervision of patients in their own families.

PUBLIC EDUCATION AND CONTROL WORK

Preventative action in mental health is concerned with public education and control activities which affect the development of personality and which help to maintain or to jeopardize mental health.

Since it is thought that mental health and some mental disorders begin with the earliest experiences of childhood, particular emphasis is being placed here. Parent-child study groups have been asking for leadership to help them better understand normal growth and the vital periods of life at which stresses develop. The elementary teacher and other personnel in the school who spend

6 hours a day, 5 days a week, 9 months a year with children are as important in maintaining the mental health of the boys and girls as are the parents and family. Work with small groups of teachers in understanding the needs of the 30 or 40 children for which each is responsible and in cooperating with their parents will pay off many times over. The needs of youth; finding answers to the problems of adults displaced by war and the industrial and social changes of an atomic age and the growing demands for developing effective programs for our rapidly increasing numbers of aging and old people—these are some of the preventative mental-health tasks which face every professional worker and every citizen today.

In 1945 the States spent $166 million to care for patients in mental hospitals but only 24 States had preventive programs. The passage of the National Mental Health Act in 1946 gave recognition of the extent of the problem and through consultation and grants-in-aid helped every State and Territory to develop a preventive program by 1951. Organized community mental-health activities under the aegis of health, welfare, education, or citizen mental-health societies are easily identified, but some mental-health activities are not always so specifically labeled. Physicians, nurses, teachers, social workers, court officials, industrial counselors, and religious leaders can and do contribute through their ability to reach people in their everyday work if they have a better understanding of human relations and human behavior. Most of our mental-health needs can best be met by parents and neighbors themselves at a neighborhood level provided these people have informed leadership to help them. Since teaching individual by individual is a slow process, group methods are being developed. This has the advantage of enabling one leader to reach more people and of helping individuals learn how to help each other too.

For samples of the kinds of mental-health activities that are being carried out at a neighborhood or local level, the following list is offered: Family-life discussion groups; expectant-parenthood classes; cooperative day-care facilities for preschool children; joint PTA study groups or parent-youth-teacher discussion groups; professional refresher courses and seminars; human-relations material in school curricula; youth councils for better liesure-time facilities; vocational counseling in schools and industry, educational programs for the physically and mentally handicapped and volunteer citizen participation in plans to meet the mental-health needs of the older people, the chronically ill or aged confined to their homes or hospital beds, and the mentally ill and subnormal.

Preventive mental-health action is also the responsibility of State, national, and international citizen groups and tax-supported authorities. These offer local group-consultant services for programing; make studies and collect data on the kind and extent of the mental-health needs; support production of informational and educational materials such as pamphlets, plays, films, radio, and TV programs; encourage research focused on healthy patterns of behavior and family and community life and encourage public support for the training of personnel, the improvement of mental-health services, and research.

There are two basic needs in this field—greater utilization of present knowledge and additional research to provide additional knowledge. Utilization of present knowledge can be accomplished by having trained personnel available for work with professional and interested citizen groups. Our knowledge of the causes and prevention of many mental illnesses is limited and much research is necessary to provide additional knowledge that can be put into effective use.

THE NATIONAL INSTITUTE OF MENTAL HEALTH

Under the National Mental Health Act of 1946, the Public Health Service was authorized by Congress to engage in laboratory and clinical research, to assist in developing preventive and treatment programs, and to make grants for the furtherance of research, training of needed personnel, and expansion or establishment of community mental-health services.

In these activities, the National Institute of Mental Health as an agency of the Federal Government, is designated to act as a coordinating and research-stimulating center to speed acquisition of new knowledge and expedite more effective application of existing knowledge throughout the country.

The intramural basic research program

The past 2 years have seen the initiation of a combined program in basic research for the National Institute of Mental Health and the National Institute of Neurological Diseases and Blindness under a single associate director. This program is based on a thesis which recognizes that progress in the diagnosis and

treatment of nervous and mental disease rests firmly upon a basic understanding of the nervous system through the biological and behavioral sciences. Since it is difficult if not impossible to predict which basic research areas will develop information of practical therapeutic value, a well-balanced program will include representative research in all major areas in an effort to provide opportunity for contributions from many diverse fields and to utilize profitably the unique facilities of the National Institutes of Health for interchange of ideas and pooling of efforts among the various disciplines.

The basic intramural research program extends from the biological to the psychological sciences and has attempted to encompass all of the important disciplines of relevance to the nervous system. It includes a Laboratory of the Neuroanatomical Sciences for research in the structure and development of the nervous system and the relationship between structures and their function. The Laboratory of Neurophysiology has already had several years of productive existence. It is devoted to studies on functional activity of the brain, spinal cord, and peripheral nerve. Its staff includes individuals of national reputation for their work on the electrical activity of the cerebral cortex. The Laboratory of Neurochemistry is being established at the present time to investigate the physical chemistry of the components of the brain, important aspects of intermediary metabolism, and to pursue previous studies of one of its investigators on blood flow and metabolism of the brain.

The Drug Addiction Research Center at the United States Public Health Service Hospital in Lexington, Ky., has pursued a program on basic mechanisms of drug addiction and studies on newer narcotic drugs.

The Laboratory of Experimental Psychology is presently being established to carry on work in the areas of behavioral and mental sciences, while the Laboratory of Socioenvironmental Studies is actively pursuing a study of the genetic and environmental factors in mental diseases as well as the effects of interpersonal relationships in modifying their course.

Intramural clinical research

With the additional facilities of the National Institutes of Health Clinical Center, the National Institute of Mental Health will now be able to conduct intensive studies of clinical situations; the general goals will be to make contributions to a theory of personality development, communication theory, and to the physiology of mental disorders based upon objectively verified data. Work at the center in the field of mental health will include studies on schizophrenia, children with emotional disturbances, and psychosomatic illnesses.

Extramural-research program

Supported by Federal grants, research continues throughout the United States to uncover the causes and develop more effective treatment techniques in mental illness.

Grants are awarded by the Surgeon General of the Public Health Service upon recommendation of the National Advisory Mental Health Council, composed of 12 non-Government leaders in medicine, the fundamental sciences, and public affairs.

In the 6 years since the first research grants have been awarded under the National Mental Health Act, 203 projects have received support. Analysis by problem area shows that a substantial amount of support has been given to research into (*a*) the etiology, symptmatology, and pathology of mental illness, (*b*) development or evaluation of treatment methods, (*c*) normal child development, (*d*) studies of the nervous system, and (*e*) the relation of environmental stress to mental health and illness. Analysis by disorder shows that projects deal with psychiatric disorders, adjustment problems of various kinds, basic research, and neurological and other disorders. Analysis by methodology shows that psychological methods, social-science methods, biological chemical or pharmacological methods, psychiatric-treatment methods, and interdisciplinary research methods were used to get a basic understanding of the causes and treatment of mental disorders. One study in the field of neuroanatomy is investigating postnatal development of the human cerebral cortex. In a study on mental deficiency, mongoloids (who show symptoms similar to those observed in nutritional deficiencies) and other mentally deficient patients are being examined to ascertain whether their requirements for some nutrients are higher than normal or whether the metabolism pattern is abnormal. To find out more about genetic factors in mental illness, a study is being made of a statistically representative sample of 876 twin index cases, 61 to 96 years of age, dealing

with constitutional aspects of aging, longevity, adjustment to senescence, and hypertensive disease, with special attention being given to the development of psychotic phenomena in senescence.

The effectiveness of shock therapy with certain types of mental illness has stimulated continuing research in this method of treatment. A study is underway to evaluate a new method known as photic shock which may have the additional advantage of permitting determination of the amount of neurophysiological alteration induced by the treatment. A new technique has been devised for studying mind-brain relationships, and is now being used in the study of schizophrenic patients. The use of this technique has produced in these patients increased clarity of thought and marked improvement in their condition.

The grants program also includes continuing exploration of the use of surgery in mental illness; the psychosomatic aspects of such disorders as asthma, arthritis, and ulcerative colitis; central pain conduction and the emotional reactions associated with pain perception; evaluation of group and individual psychotherapy, and a wide variety of other studies.

In addition to the award of research grants, significant support is being given for the training of scientists in research technique by means of postdoctoral research fellowships in such fields as psychiatry, neurology, neurophysiology, biochemistry, and the social sciences. In this way, the future availability of research scientists in the many fields which may contribute to problems of mental health and illness is furthered. The total number of individual scientists who have received research fellowships during the first 6 years is 179.

Epidemiological and biometric research

Accurate, adequate, and consistent collection and compilation of statistical data on mental disorders are requisite, yet data in this field are still not satisfactory. At a conference this year, the 15 States of a model-reporting area (now providing care for 64 percent of all patients in State mental hospitals) reported that about three-fourths of their number have begun cohort studies of their admissions—a significant attempt by the States to determine disposition of patients by age, sex, and diagnosis within specific intervals after admission and so provide uniform data for evaluation of the operation of State-hospital systems. A new directory (prepared from lists of hospitals recognized for the treatment of mental illness submitted by the 48 States and the Veterans' Administration) will, it is hoped, serve as a basis for designating admissions to the State mental hospitals as first admissions or readmissions, making future reporting of these data more uniform. An annual report form on both patients and clinic facilities for use by psychiatric outpatient clinics has been developed and is being given a 1-year trial run preparatory to nationwide use. Also, completed surveys provide data on a national scale as to which general hospitals accept mental patients, whether dignostic or treatment services are available, and the specific treatments obtainable.

In an epidemiological survey, the Institute's Laboratory of Socio-environmental Studies is investigating the distribution of functional psychoses in Hagerstown, Md., where public health studies have been going on since 1921. Mobility and family life differentials between functional psychotics and controls, matched as of a period prior to the onset of illness, are now being studied.

Increasing reservoir of psychiatric manpower

There is a shortage of professional personnel in all mental-health fields. In supporting training programs at universities, hospitals, and other training centers, the Institute has followed the principle that quality of teaching remains of first importance. Therefore, graduate teaching in psychiatry, clinical psychology, psychiatric and mental-health nursing, psychiatric social work, and public health mental health is being furthered, in addition to an undergraduate training program for some 14,000 medical students to acquaint them with the basic principles of psychiatry. Stipends are also made available for individuals receiving graduate professional training in psychiatry, psychiatric social work, clinical psychology, and psychiatric nursing. The Institute is also working with other professional groups to assist them in clarifying their roles and strengthening the application of their own special skills in promoting mental health.

Community services

Because of the shortage of psychiatric personnel, especially in the group with training and experience in public mental-health work, the States have turned to the Institute and its regional consultants for counsel and guidance in de-

veloping State and community mental-health programs. The development of State and community programs is a new venture. Each consultant, working with a group of States, is able to bring to each State individually the benefit of experience gained by other States. This enables each State to do sounder planning and avoid the pitfalls encountered by others. All the States and Territories now have going mental-health programs while the Institute, by providing technical assistance and conducting field studies and investigations, furnishes guidelines for better application of new information resulting from intensified and more widespread research activities. In accordance with the Mental Health Act, the Public Health Service awards grants to States on a matching basis for the development and expansion of States and community mental health services, exclusive of hospital and institutional services.

Exploratory research areas

The Institute is aware that there are several areas in which mental-health activities have not been adequately developed or coordinated by any of the welfare, service, or professional groups working in the field. In most of these cases, the lack of activity has resulted in part from an insufficient knowledge of the techniques and procedures which can be utilized and inadequate comprehension of the relationship between mental health concepts and the wider social problems that are represented in some cases.

Accordingly, the Institute has initiated exploratory activities looking toward the better development of programs in these fields. The areas which have been explored to date and upon which different amounts of progress have been made are the following: (1) Rehabilitation of the mentally ill, (2) drug addiction among youth, (3) mental health aspects of aging, (4) mental health aspects of juvenile delinquency, (5) mental health aspects of mental deficiency, and (6) the communication of mental health concepts.

For example, in the field of the rehabilitation of the mentally ill the Institute has prepared fairly exhaustive studies of the current practices and knowledge in the field. It is also supporting an experimental project at a State hospital designed to measure the effectiveness, cost, and possible savings resulting from a carefully planned rehabilitation program. A study is just beginning under the sponsorship of a leading school of public health to measure the community influences which tend to support and to continue the rehabilitation of discharged mental hospital patients and to identify those influences which have a deleterious influence. It is hoped that some of these factors will be subject to manipulation so as to strengthen the postitive influences and to minimize or to eliminate the negative ones. Work has also been done with respect to orienting and educating vocational counselors with respect to helping patients who have suffered a mental illness. This work is of great importance, since one study has shown that intensive vocational rehabilitation of mental hospital patients pays large dividends to the taxpayers. Additional facets of the rehabilitation problem are beginning to emerge and will receive appropriate consideration at the proper time. A similar approach by the Institute is being made to broad problems in the fields of juvenile delinquency, mental subnormality, drug addiction among youth, communication of mental health concepts, and the psycho-social aspects of aging.

SUMMARY—GENERAL PERSPECTIVES

The foregoing sections of this report have dealt with the field of mental health, the size and cost of the problem, the resources and services now provided, the current state of knowledge in this field and the need for further research, and the areas in which the National Institute of Mental Health is contributing toward an amelioration of the problem.

There is probably no more serious problem facing us in the health field today than that of mental health. We have to learn much more about the causes, diagnosis, and treatment of mental illness. We need to improve and expand the services for those who are already ill and to increase our preventive and control work in this field. To accomplish these goals, we need more research, both basic and clinical, more people to carry on the research, and more facilities in which research will be encouraged and expedited. We need more trained professional people to treat and rehabilitate the mentally ill, and to conduct preventive and control work.

Specifically, we need to improve the treatment and rehabilitation services in our mental hospitals, and to develop research as part of the continuing responsi-

bility of mental hospitals and other State and local institutions. We know very little as yet about the cause and treatment of the mental deficiencies; there are indications that much can be done toward fitting the mentally subnormal for socially useful life.

Community mental health programs (including clinic services, consultation facilities, and public education) with built-in evaluation procedures need to be developed. More effective techniques for carrying on these programs need to be investigated in field studies, and the application of new and improved methods speeded by means of demonstrations of mental health services. More and more professional people need training in consultative skills required to deal with community problems, and there needs to be more widespread application of psychiatric principles in school and industrial health programs, in the work of courts and other social institutions.

We need more studies on the biological aspects of mental disease, the causes of the various mental disorders, and the prevalence and incidence of mental illness, with special reference to treatment of the mentally ill outside the hospital and clinic situation. The earlier that treatment for mental illness can be instituted, the more hopeful the prognosis. We need to develop more rapid and accurate diagnostic techniques, especially for early screening and detection of mental and emotional disturbances. We need to evaluate and refine currently known methods of treatment to know when to apply them and when not to apply them. We need control studies of the effectiveness of intensive treatment units in the receiving services of our mental hospitals. We need to search for and find more effective methods of treatment and to develop more effective and widespread programs for the rehabilitation of the mentally ill. We need to find out more about what happens to mental patients after they are discharged from the hospital through follow-up studies of former patients and patients in extramural care. And we need to develop and perfect techniques for assuring that as new knowledge is acquired, it is transmitted as rapidly and effectively as possible to the professional personnel and the service facilities where it will be put to use.

There is much we have to do and have to learn in order to wage an all-out campaign against mental illness. But there is much that we already know and can do, given the funds, the people, and the facilities to do them with. The impetus provided by the Federal mental health program, the accomplishments of the professional societies in furthering knowledge and improving treatment, and the yeoman work of the voluntary and lay organizations have done much to speed us on our way. With greater public recognition of the importance of this vitally important health field, and with concerted efforts toward furthering research, training of professional personnel, and mental health services, the future should be promising. The stakes—both in terms of money and man—are too great for our Nation not to exert every possible effort and explore every possible avenue. The conquest of mental illness and the promotion of positive, mentally healthy, constructive human relations hold out for us the promise of a new frontier.

Mr. PRIEST. I have one further question which either Dr. Wortis or Dr. Stevenson can answer.

Has there been organized in all of the States, or most of the States, a State mental health association?

Dr. STEVENSON. Not in all of them. There are 29 affiliated with the national association at the present time. There are two presently applying. There are in perhaps 6 or 8 States embryonic organizations, but where there does not exist a mental-health organization on paper.

In the aggregate they would represent, perhaps, 90 percent of the population. That is because of the greater difficulty in organizing in the more sparsely settled States.

Mr. PRIEST. These State organizations, particularly when they are active and have some enthusiasm, I think are doing a very tremendous amount of good in the education necessary to back up the State legislature if it sticks its neck out, as you put it a while ago.

In my own State we have a State association, and I believe we have three divisions of it. There is one for middle Tennessee, of which I

happen to be a member. It has been quite enthusiastic, and holds regular meetings. I think some of the progress that we have made in the last 2 or 3 years has been largely due to the backing given to the State legislature by citizens who are affiliated with these groups and with the clinics down there which have been established under Dr. Felix's grant-in-aid program.

I believe that is all for the present, Mr. Chairman.

The CHAIRMAN. Mr. Heselton.

Mr. HESELTON. I should like to have one of the doctors answer this question. I wonder how we are situated in this respect in this country as compared to the progress in other countries.

Dr. FELIX. We are away ahead of other countries, I think. May I qualify that. I have been to some of the Scandinavian countries, and in the care of the ill in hospitals we are ahead of them. Dr. Wortis has recently returned from over there and can probably tell you more about it and can correct me in this or amplify if it is correct.

Insofar as training psychiatrists, nurses, neurologists, and social workers and psychologists is concerned, the rest of the world comes here for that.

One of the reasons for this, I suppose, is because those countries over there cannot go into this work because of certain disadvantages and restrictions.

Now, insofar as the number of clinics is concerned, I am sure that our ratio is much lower than it should be for adequate coverage of the Nation, by 50 percent at least. However, we still are ahead of the rest of the world.

Mr. HESELTON. What about the interchange of information between our country and some of the others?

Dr. FELIX. I believe with the exception of the Iron Curtain countries that the interchange of information is good.

Dr. Blain has mentioned that he was a member of the panel on mental health of the World Health Organization.

The head of that section has visited us on several occasions. We have in the National Institute of Mental Health a demonstration clinic, set up on the University of Maryland campus which is set up to demonstrate the procedures used in this area, and an experimental thing for the areas meeting these problems. Every year we have visitors, depending on the year, from a dozen foreign countries who spend some time with us and take a lot of this information back.

On the other hand, all of us here in the National Institute of Mental Health also are corresponding with colleagues with whom we are personally acquainted in the various countries. I suppose that there is more correspondence with the United Kingdom, Italy, France, and the Scandinavian countries than elsewhere in the world. However, that may be just based on my personal experience.

Mr. HESELTON. That is all.

The CHAIRMAN. Are there any further questions?

Thank you, Doctor, for the report that you have made to us. The information that you have given us is rather gratifying to us in view of the fact that this committee originated the research program. In fact, we are interested in how it progresses, and when we hear a report such as you have given today it is exceedingly pleasing to us.

Is there anything further?

Dr. WORTIS. I believe Dr. Blain has a statement he would like to make.

The CHAIRMAN. May I inquire how much longer it will be? I want to arrange for the recess.

Dr. WORTIS. How much longer time it will be?

The CHAIRMAN. Yes.

Dr. WORTIS. I believe we can be completed with it in 15 minutes. Is that agreeable to you, Mr. Chairman?

The CHAIRMAN. Yes.

Dr. WORTIS. Dr. Blain.

STATEMENT OF DR. DANIEL BLAIN, AMERICAN PSYCHIATRIC ASSOCIATION, WASHINGTON, D. C.

Dr. BLAIN. Mr. Heselton raised a point which is very close to my heart when he spoke in regard to this matter of other countries.

I spend nearly all of my time traveling. I have been interested in traveling around the United States and Canada, and I have visited about 20 countries personally in the last 7 years, and I found a number of different kinds of people working, and I share those same things with others. I have been interested in what is going on in other countries.

I would like to state that we cannot really solve our major problems or probably will not, as easily if we had a closer opportunity to work with scientists of other countries. For example, when many of us discussed the subject about certain studies with regard to hygiene, the question of an epidemiological study came up and we concluded it would be of extreme value if we had some sort of a combination of scientists in a number of different countries working on this problem at the same time.

The ways and means of accomplishing such a thing are very uncertain at this time. One could work through the World Health Organization perhaps, but their budget is too small to attempt it at the moment.

I think we should look into the matter of Government policy at this time and see whether or not through Dr. Felix and others we can arrange to join with others in some sort of a project such as this. I am myself convinced we will receive enormous benefits from it.

We are away ahead of other countries because we are doing the training, but the great ideas and the advances in medicine do not all come from this country. We need help and every possible asset they can offer.

I feel I would like to have a further investigation of the local and other political opportunities that now exist and which, perhaps, could be created to work together with other countries such as this.

I could say many more things that I am interested in.

However, I would not want to lose this opportunity of expressing my extreme appreciation for the fact that there sits at this table talking to the committee two employees of the Federal Government who represent, I would say, the top in our profession.

As a former Federal Government worker with the Veterans' Administration, as a person now not employed by the Federal Government, but, rather, a private physician working for a private organiza-

tion, it is with great pride that I can look and see Dr. Kety and Dr. Felix. I want to record that as the opinion of somebody back in private work and not with the Government.

Thank you very much.

The CHAIRMAN. I think the committee would be willing to accept at 100 percent what you say about these two gentlemen.

It has been also discernible to the committee as we have proceeded through these hearings that the individuals who have come to us from our National Institutes have been of very high caliber, and they have been so recognized by the other outstanding and distinguished witnesses who have appeared here.

It is another cause for gratification, so far as this committee is concerned, to realize that our work in the National Institutes has been founded upon individuals who are so competent and whose ability is so generally recognized, and we trust that it will always be so.

(The prepared statement of Dr. Blain follows:)

STATEMENT ON PSYCHIATRIC ILLNESSES AS ONE OF THE PRINCIPAL DISEASES OF MANKIND, BY DANIEL BLAIN, M. D., MEDICAL DIRECTOR, AMERICAN PSYCHIATRIC ASSOCIATION

I. SOME OBSERVATIONS ABOUT MENTAL ILLNESS AND ITS SIGNIFICANCE

Psychological factors affect all illness

A total conception of mental illness encompasses virtually the whole range of illness since body illness has as its unfortunate partner a psychological state, which sometimes is fundamental to and at other times secondary to the physical condition, and which frequently causes more unhappiness than the physical condition itself. The psychological aspects of all medical conditions are sometimes related merely to the patient's attitude toward his illness, but more frequently, to the catastrophic results of illness, such as loss of income, inability to care for the family, and so on.

The socially maladjusted

Mental illness also encompasses a group of socially maladjusted individuals who have difficulty in their interpersonal relations because of social and individual personality defects. In this group we find various character disorders, so-called psychopaths, alcoholics, delinquent children, and adolescents, most criminal cases, school failures, labor misfits, the chronically irresponsible, the immature, the potential suicides and the like.

Strengthening human character

Psychiatry is also concerned with the concept of prevention of mental disease, or, more positively, with the creation of mental health for all human beings. The ups and downs that every normal person experiences, the slow-reading child, the troubled adolescent, the old people who have no place to go, the maritally maladjusted, the "edgy" businessman, the insomniac, the man with a chip on his shoulder, the accident-prone driver—these and hundreds of other everyday human problems are suitable subjects for the application of psychiatric insights. Psychiatrists have no magical solutions to the world's problems, but there is no doubt that the psychiatrist's knowledge of the psychobiological structure of human personality can and does contribute to the strengthening of human character and physical well-being to the end that man may grow ever more immune to the ravages of life experience.

Range of mental illness

Technically speaking, however, the range of mental illness covers acute and chronic disorders, such as disorders with brain damage; mental deficiency; psychotic disorders of which schizophrenia is the most common and the most puzzling as to cause and treatment. Other common diseases include the manic depressive psychosis, paranoia, and illnesses wherein the autonomic nervous system is affected by emotional states causing secondary physical conditions, sometimes known as psychosomatic illnesses. For example a very large number

of stomach disorders, especially ulcers, are found among the compulsive dynamic leaders of American life. Mental illness includes the psychoneurotic disorders, such as anxiety, obsessive, and compulsive states, and the like; and also the transient situational personality disorders such as the depressive states that plague people in periods of frustration, when loved ones are lost, when youth gives way to middle age, when marriages break up, and so forth.

Social roots of mental illness

The prevalence of psychoneuroses—the milder forms of mental illness—are of particular significance because they appear to have their roots in cultural, social, and economic factors such as family situations, conflicts between individual and community demands, and between the so-called animal nature of man and his spiritual nature. Psychoneurotic manifestations appear most severely in periods of crisis when severe demands are made on a personality to adjust to new situations and responsibilities—e. g., taking on a new job, becoming parents, entering college, suffering from physical disability, and so forth.

Suspicion and fear

It is a phenomenon of special importance that mental diseases, more than any other group of human frailties are regarded with suspicion and fear by most people. This is partly due to ignorance, and partly a protective device against admitting that each of us may have the seeds of mental illness within us. It results in unwillingness to face mental illness, to accept treatment, to support the mental hospitals, to comfort those who are ill, to give employment to those who have recovered from mental illness, and related unfortunate consequences. It is believed that better public education accompanied by scientific advances are gradually overcoming public indifferences, but the problem remains a vast one.

A massive problem

In terms of hospital beds, mental illness is a massive problem, with 50 percent of all hospital beds in this country occupied by mental patients. This situation is to a large extent a legacy from the past, marking the failure of the American people to launch an all-out attack on this problem. To my knowledge in 1953 there is not a single aspect of psychiatric practice that is not hampered by lack of personnel, facilities, and public support; and this statement may be documented by any amount of statistics.

Social destructiveness

In terms of social destructiveness of self, family, and community, mental illness has no peer. But it is not a major cause of death. On the contrary, the outlook of the victim of mental illness is too often a lifetime of unhappy hospitalization, hardly a happy alternative to a quicker and kindlier end.

A billion-dollar burden

As an economic burden to the Nation, the direct cost of caring for the mentally ill in public hospitals and in pensions to veterans is over $1 billion a year. The mental-hospital item is frequently the largest in a State budget, ranking with roads and schools. The cost increases from year to year. There is no end in sight. But this is only the taxation part of the picture. The cost of care in private hosiptals and in private practice, the loss of earning power of perhaps 800,000 people, the destructive influence of mental illness on the earning power of others—this leads to a total cost that probably hovers in the vicinity of $2 billion a year.

The family suffers

The cost of mental illness to the family should be considered by itself. In the public hospitals, the cost varies and is often borne by public welfare. But even here, if the family pays all or a portion of the expense, the cost will be a heavy burden over many years. In general hospitals, many of which now care for short-term cases, the cost of care is as high as for any illness. The cost of treatment in private practice is expensive since a psychiatrist as a rule can see only one person in an hour's time, and he must charge enough to insure a reasonable income for himself and his family.

Lack of personnel

One of the most significant factors underlying our present capacity to cope with mental illness is the shortage of skilled personnel in all categories—psychiatrists, nurses, social workers, etc. For example, the American Psychiatric Association has a membership of 7,700, comprising the bulk of psychiatrists

in the United States and Canada. There are perhaps another 1,000 who do not belong. In recent years there has been a net gain to the profession of about 450 physicians a year; but this figure seems likely to reduce to 400 or less in the years immediately ahead since the postwar surge of interest is tapering off and medical schools and graduate centers are not turning out as many as formerly. It has been estimated that there is an immediate need for as many as 15,000 psychiatrists. Thus, it will be a decade or so before the number of psychiatrists available approaches the number needed. Similar shortages are prevalent in the other key professions—nursing, social work, etc. It is important, therefore, that techniques be developed to make the best possible use of what personnel is available. There are simply not enough specialists to do the entire job. An administrative framework must be set up in the hospitals, for example, where experts confine their work to the organizing, supervision, and direction of other less highly trained personnel. The situation calls for imaginative administrative research and experimentation. At the same time, the medical schools and the graduate training centers must be given every encouragement and support in turning out more highly trained personnel.

Government cannot do it all

Unlike other medical fields, psychiatry has been in large part "state medicine" in this country; and it is difficult to envisage any other system for handling the bulk of the hospitalized mentally ill because of the social and catastrophic nature of mental disorders. Nevertheless, like all "state medicine" the system suffers from lack of personnel, lack of incentives, insufficient reward for accomplishments, lagging research, the "ups and downs" of public interest and support, and the like. Even so, great progress is being made in our mental hospitals today. But progress will proceed at a much quicker pace if we harness the total forces available, both private and public, to a better integrated effort. State and Federal Governments cannot do the job by themselves. Individual community effort and resources must be brought into the picture.

II. ROLE OF AMERICAN PSYCHIATRIC ASSOCIATION

Seven thousand seven hundred psychiatrists

The American Psychiatric Association is comprised of 7,700 physicians who have specialized in psychiatry. As the leading organization in the field it reflects the aims and objectives of the psychiatric profession today. Over half of its members are diplomates of the American Board of Psychiatry and Neurology which requires 5 years of specialist training in this field. It takes a minimum of 10 years after high-school graduation before a psychiatrist can be certified by the Board.

Professional objectives

The funds available to the American Psychiatric Association are realized from dues paid by its members and from temporary grants from various foundations and Government agencies for special projects. It is a nonprofit educational association and all of its funds are used in behalf of its stated constitutional objectives which are: To further studies of the nature, causation, treatment, and prevention of mental disorders; to advance standards for the treatment and care of the mentally ill; to further psychiatric education and research; to make psychiatric knowledge useful to other branches of medicine, to other sciences, and to the public welfare.

Major interests

The names of its committees indicate the major interests of the association. These are the Committees on Child Psychiatry, Psychiatric Education Rehabilitation, Public Health, Research, Therapy, Clinical Psychology, Psychiatric Social Workers, Psychiatric Nursing, Legal Aspects of Psychiatry, Nomenclature, and Statistics, Hospital Standards and Policies, Academic Education, Industrial Psychiatry, International Psychiatry, Leisure Time Agencies, Military Psychiatry, Preventive Psychiatry, Public Education, Veterans.

Special services

The organization publishes the American Journal of Psychiatry and numerous other books and reports. It is responsible for the inspection of rating of mental hospitals in the United States and Canada. It operates the Mental Hospital Service—a clearinghouse for technical information for the hospitals—to which 450 public and private hospitals in the United States, Canada, and abroad sub-

scribe. The association, for the last 12 years, has been responsible for accrediting and rating all schools of nursing in metal hospitals of the United States and Canada, including the affiliate programs which bring in students from general hospitals for specialized psychiatric training. The association is now operating a study of mental hospital architecture and equipment, made possible by a $180,000 grant from 2 foundations.

Overall leadership

The association as such does not lend direct financial support to clinical services or research. Through its offices and personnel, however, it provides the leadership, stimulation, and guidance which are indispensable to the advancement of psychiatry throughout the Nation.

III. SIGNIFICANT SCIENTIFIC DEVELOPMENTS

Psychodynamics

Perhaps the most significant development is the evolution of phychodynamics as a science. Psychodynamics refers to a systematized knowledge of human behavior and motivation. One of its fundamental postulates is that human beings are motivated and goal didected, in persistent long-term patterns, and that understanding the immediate meaning of an action requires the context discernible in the overall meaning of the biography of the organism. Psychodynamics has evolved from the contribution of Sigmund Freud, the European founder of psychoanalysis, and the great American psychiatrist Adolf Meyer whose approach may be referred to as "commonsense, genetic dynamic psychiatry." Psychologic and anthropological research have contributed to it, as has some laboratory research. Techniques used in psychodynamics include interviews, direct observation, and description of the person in significant life-situations, biographical review of previous behavior, a systematic investigation of unconscious processes, utilizing material evoked from free associations, dreams, etc. Most psychotherapy today is based on psychodynamic principles. Increasing skill is gained in the use of such psychotherapy, particularly in treating the sychoneuroses, such as severe anxiety and compulsion states. Usually such cases are not hospitalized but are treated in the private practitioner's office or in clinics. The development of psychodynamics has increased our knowledge of the causes of psychoneurotic conditions as resulting from conflicts between the individual and society as well as conflict within himself. It is safe to assume that many thousands of patients are kept out of the hospital every year through psychotherapeutic treatment in the private practitioner's office. Indeed, the number of patients carried by private practitioners is probably roughly equivalent to the number that are cared for in hospitals.

Group therapy

Rapid development of group therapy techniques is most auspicious, particularly for the public hospitals, all of which have severe shortages of psychotherapists on their staffs. More than that, it has been found that patients will benefit from the social pressures exerted on them in a group therapeutic setting in ways that would not be present in individual psychotherapy. Group therapy is being seized upon as a tool that offers great hope. It, too, of course, requires skilled personnel and leadership.

Psychosurgery

Psychosurgical techniques (lobotomy, topectomy, etc.) appear to have resulted in the improvement of a moderate number of chronic mental patients in various hospitals throughout the country. A few physicians are ardent protagonists of psychosurgery pointing to the fact that it has succeeded in improving a great many patients considered entirely hopeless before, and in many cases has even made it possible for such patients to return to the community. Another group is strongly antagonistic, believing that psychosurgery, involving as it does cutting of brain tissue, constitutes a partial and irrevocable destruction of a human personality, inexcusable under any circumstances. The bulk of the profession views psychosurgical operations with the utmost circumspection and a goodly amount of healthy skepticism. In general, physicians who recommend psychosurgery at all do so only for long-term psychotic patients considered impervious to any other kind of therapy.

Shock therapies

In some respects the development of shock therapies—electroshock, metrazol, insulin—has been encouraging. Particularly striking has been the effectiveness of electroshock in treating involutional melancholia. Before the introduction of electroshock only about 40 percent of the melancholics recovered and then only over a period of 2 or 3 years. It is now found that about 90 percent of these patients respond promptly to electroshock and may be discharged from the hospital in a matter of weeks. Shock treatments of various kinds are also used in the treatment of other psychotic disorders with varying success. These treatments are frequently helpful because they make the patient more accessible for psychotherapy. In general, such therapies tend to produce some auspicious results when they are first applied, but initial success with the patient is often not maintained over a period of time and it may be said that less faith is placed in the efficacy of shock treatments as time passes.

Total push

The phrase "total push" has been coined in the profession to refer to a hospital technique of mobilizing and applying to a patient all of the social forces in the hospital which will tend to push him toward recovery and out of the hospital. It is a special way of speaking of a concentrated effort. It involves a carefully designed application of psychotherapy, group therapy, occupational therapy, participation in ward activities, educational programs, recreation, and the like. The technique, of course, requires adequate personnel and facilities. Where it has been tried it has produced remarkable results, even with backward patients. There is no doubt that the development of total-push techniques is one of the best hopes for hospitalized mentally ill in the years immediately ahead.

Schizophrenia

About one-half of mental hospital patients in this country have one form or another of schizophrenia—simple type, hebephrenic, catatonic, or paranoid. Like cancer, it is one of the great medical mysteries of our time, but unlike cancer, no comparable amount of time and effort has been spent to discover its etiology and possible forms of treatment. Empirical evidence suggests that it is at once a social, a psychological, and a physiological disease, and it must be attacked on all three fronts. A great many schizophrenics in hospitals get well spontaneously, especially under a "total push" regime. Some experimental and successful work has been done in treating schizophrenics psychoanalytically, but in so few cases as to be statistically of molecular significance. Some research projects of recent origin in the physiology of schizophrenia are promising, and suggest that a greatly increased understanding of the disease lies shortly ahead of us. For example, many research projects have turned up evidence that schizophrenics manifest an imbalance in endocrine function associated with psychic disorder. It is not known, however, whether the dysfunction comes first, leaving a person vulnerable to the stresses of everyday living, or whether the stresses cause the dysfunction. Certainly there is an interrelation between the two. Other experimentation with adrenal-cortical hormones, subcortical electrical stimulation of the brain, and with the use of various drugs, are turning up evidence of how schizophrenia works and may, before long, point to directions in which it can be controlled.

Character disorders

The accrual of case data over many years now indicates that what used to be called psychopathic personality, considered hereditary and hopeless, is actually a character disorder (the term now used) resulting from early mishaps in personality growth, and a condition that is subject to treatment, albeit with difficulty.

Alcoholism and drug addiction

There is increasing understanding of the physiological changes that occur in bodily organs in alcoholism and drug addiction, making these conditions more susceptible of treatment.

Senility

There is increasing realization that a great many of the senile dementia cases in mental hospitals actually are depressive reactions on the part of elderly people who find themselves suddenly isolated, without interests, jobs, or loved ones to care for them—rather than cases involving organic brain damage. This fact has important implications for dealing with such cases in a more constructive, hopeful way than in the past.

Vitamins

The part that vitamins play in health is now better understood, and research in this field is likely to yield much of importance in the years ahead. This was demonstrated in studies of pellagra and primary anemia which it was found frequently masqueraded as senile psychosis in mental hospitals, and which now yield to treatment and often discharge from the hospital.

Arteriosclerotics

Studies of the relationship between fat metabolism and hardening of the arteries (causing anemia of the brain) appear to offer new hope in tackling this widespread disease of old age.

Mongolian idiot

Among other advances in the field of mental deficiency and feeblemindedness it it is notable that an understanding of "Mongolian idiocy" seems to be yielding to the joint research efforts of neuropsychiatrists, neuropathologists, obstetricians, and others. This condition in children is a heart-rendering tragedy which may strike any family at any time regardless of class or social status. Recent studies now indicate that this defect in the infant is not hereditary but rather is the result of some physiological accident occurring in the mother around the sixth week of pregnancy. The phenomenon is unexplained, but further research may turn up preventive techniques. Moreover, there is a new attitude developing toward what has traditionally been considered the hopeless cases of mental deficiency. The professional research people in this field are successfully classifying and selecting patients in some categories for special therapies with most constructive results, although for many categories the outlook remains bleak. The establishment of research centers in several States in this field is most auspicious.

Administrative research

Marked advances are being made in the administration of mental hospitals. Studies are being made of the hospital's social milieu, the organization and conduct of ward operations and their effect on the patient. Much headway is being made in a scientific approach to the use of volunteer help in the hospitals. Some institutions have found that a great deal of useful work can be done in the hospital by using relatively untrained but carefully selected and well-supervised part-time volunteers. A study of mental-hospital architecture and design now in progress promises to result in more efficient administrative arrangements with therapeutic gains for the patient. The concept of the mental hospital as merely one part of a community network of psychiatric services—each interrelated to the other—is gaining acceptance with corresponding benefits in terms of keeping more patients out of the hospitals and helping those who are discharged to readjust to community life. Within this concept the mental hospital is viewed as a kind of "defense in depth"—a last resort if other defenses fail. The American Psychiatric Association makes a persistent effort to raise standards of administration in the hospital to the end that what personnel is available may be used most effectively. The association has recently established a committee to certify qualified mental-hospital administrators.

Outpatient services

The techniques of treating patients in outpatient clinics have so advanced that it is probably safe to say that as many as one-third of the patients who are now treated successfully in the clinics would several years ago have been regarded as suitable only for hospital treatment. This is tremendously significant. Obviously treatment in an outpatient clinic is less costly than hospitalization. It allows the patient to remain at home while undergoing treatment, and it has the great therapeutic advantage of allowing the healing process to take place in the same environment in which the illness originated, avoiding the violent transition from the community to the hospital and finally back to the community again. From all points of view the development of outpatient services is a striking advance and greatly to be encouraged. Society, the family, the patient—all benefit from it.

IV. SOME MAJOR UNKNOWNS IN MENTAL ILLNESS

Effectiveness of therapies

No comprehensive research program for the evaluation of existing psychiatric therapies has ever been attempted. Such evidence as does exist is empirical and

remains statistically unvalidated. The American Psychiatric Association at the present time is planning an extensive research program in this field.

Specific causes of the major illnesses, particularly schizophrenia, manic-depressive psychosis, and paranoia. Until schizophrenia can be better understood and treated there is little hope that the overall mental-hospital population in this country can be substantially reduced.

The social, economic, and cultural factors underlying mental disease: It is not known, for example, whether mental illness is actually increasing in this country, or whether the apparent increase is due to more prompt and accurate diagnosis, or to a variety of social, economic, and cultural factors such as the tension that results from an insecure world, the stresses of competition, the threats of atomic war, etc.

Interpersonal relations

Some forms of mental illness may be considered as a breakdown in interpersonal relations—family relationships, job relationships, etc. People react differently to the psychological isolation that emanates from the present age of specialization—apartment-house living, production-line jobs, etc. It seems clear that a study of this phenomenon would shed light on the etiology of schizophrenia and mental disease in general.

The methodology of measurement

Since psychiatry deals with the vagaries of human personality, it is fundamental that standards of measurement be developed in the field of emotions, perceptions, gratification, anxiety, pain, etc. For example, how measure the "recovery" of a patient? How evaluate progress?

Comparative analysis (epidemiology)

There is good reson to believe that manifestations of mental illness vary considerably from country to country. An epidemiological study carried out cooperatively by several countries should contribute a great deal to understanding the complexities of both the psychoses and the neuroses. Countries, such as the United States, which are highly organized to provide psychiatric care for its citizens at great cost, stand to benefit most from such cooperative international research.

Preventive psychiatry

This term properly refers to the avoidance of illness, as distinguished from early treatment to prevent mild cases from becoming serious. Preventive psychiatry, of course, cannot be dissociated from knowledge of the causes of mental illness which boils down to a matter of basic research. Some true preventive work is now being accomplished in guidance clinics, and schools, and through better child care generally. Psychiatry has contributed to some large industries by helping to establish better psychological atmospheres in plants. In many cases the elderly and the chronically ill have been helped to face their remaining years with a greater sense of comfort and security. But by and large progress in preventive psychiatry must be firmly rooted in the finding of basic research in the etiology of mental illness.

Public education

A distressing phenomenon in this field are the cyclical fluctuations in public interest and support for the mental hospitals. Some States experience a tremendous flurry of public concern about the hospitals—usually in connection with exposés of conditions, broadside campaigns to improve them, etc. All of a sudden a legislature will float a loan to build new hospitals. Then after a time interest seems to wither. Perhaps the State administration changes and has less interest in the mental hospitals than the previous one. In summary, a period of great progress may be followed by a period of rapid decline. Techniques of public education must be developed which will prevent this and which will insure steady public support for gradual, systematic progress in the field.

Character disorders

There is great need for research in this area since it encompasses delinquent children and adults, the criminals, and rebels against society generally. The group formerly considered as "hopeless psychopaths" falls in this category. The spread of juvenile delinquency and crime in this country suggests the urgent need of research into the mechanisms of these disorders. Enough is already known to indicate that intensive research in this field would be fruitful.

VI. ARE FUNDS AVAILABLE?

Too little money

At present only about $4.75 per mental patient is being spent on psychiatric research. This compares with $28.20 for polio, and $27.70 for cancer. In short, while some outstanding research is made possible by this kind of support, the total amount of money available is pitifully inadequate and out of all proportion to the relative importance of the disease. One might sound a particularly pathetic note by pointing out that there is not even money available to publish the results of the research that is now going on in the field.

Related inadequacies

It would, of course, be oversimplifying to state that the problem is entirely a matter of too little money. Manpower for research is remarkably short and research workers are not being trained in adequate numbers in this field. Facilities for research are likewise inadequate. Not many public hospitals in this country have laboratory facilities and the other equipment and pertinencies that are prerequisite to carrying on research. (The recent installation of laboratories in 14 out of 35 large Veterans' Administration hospitals is a great step forward.) Indeed, money applied immediately to the construction of laboratories and research centers would be spent most wisely.

Potentiality

On the encouraging side, we have the vast potentiality among the psychiatric clinicians of this country who are capable of doing research but are not being utilized. A great many of these doctors had laboratory and research experience in their younger days.

Danger of self-defeat

In considering the question of the amount of money that should be made available for research there is some danger that a circle of argumentation may develop which can be self-defeating for all concerned. One person may ask, Why should more money be appropriated for research when there is not sufficient personnel and facilities to carry it out? Another may reply that the only way of uncovering personnel and attracting them to research is to make financial support available. In other words, all parts of the circle must rotate at once if a rational approach to the problem is to be expected.

Defects in allotting research money

The current method of allotting money to research projects also leaves much to be desired. Under present arrangements, it is popular to allot so much money to a particular project for a specific length of time—usually 1 year. The research workers have no assurance that the project will be continued if more time is needed; or, if it is a Government grant, that money will be appropriated to continue the work. The uncertainty of being able to see a project through to its end is probably the greatest single defect of present procedures—and particularly so in psychiatry where it is so difficult to chart a course within a given time limit. Also it is generally overlooked that some individuals and groups of individuals are research minded in the ideal sense of the word; that is, they are wellsprings of ideas, and have the imagination and skill to carry them out. Much would be gained by making financial support available to such people and groups with no other binding directive than a simple go ahead signal to proceed where they will.

Conclusion

In conclusion, I should like to say categorically that any proposed research project in this field which is certified as a sound proposal by outstanding leaders in the field should receive whatever financial support it needs to be carried out. The amount now spent yearly on psychiatric research is around $6 million. If it were to jump to 13 or 30 million or more, it would be a small figure indeed to gamble on an all-out effort to empty the mental hospitals of America.

Dr. WORTIS. Mr. Chairman, for the purpose of saving time for the Members of the House and our committee, and this group of witnesses here I would like to attempt to give a closing statement at this time, if you please.

I think it has been clearly indicated that there is great need for more research and more funds for research to help meet this problem.

Also if we merely continue to build more institutions to care for those people, even though they are better fed, this will not solve the problem that we face.

I think another point I would like to emphasize is that there is a great need for more professional manpower, psychiatrists, psychologists, social workers, and nurses, as well as trained research personnel.

Next, we have concerned ourselves with the problem of psychiatric services in State hospitals which badly need improvement. Those services would save a great deal of money to people if the patients were given intensive and early treatment.

Also we need some help for institutions where the mentally subnormal are cared for.

There is also a need for more concentrated use of the newer therapeutic tools than are available.

We need more scientific advances, we need more incentive to get the mentally ill person back to a useful life and become self-supporting.

Moreover, we need more concentrated attention directed toward this field of prevention, control, and public education.

I think I speak for all the members of this panel of experts when I say we thank your committee for this kind opportunity to come before you.

We could go on for days, we realize, but we are mindful of your time and have tried to boil this material down to the smallest common denominator of fact and prospect.

Also to some of you, and I am sure to many of us in this room we may have, perhaps, in some places, oversimplified some of these problems. We did so in the service of clarity lest we get into professional jargon.

The problems we discussed are a little more difficult than some of us have intimated in our short statements today.

I thought I would like to make this short statement in the interest of briefing the hearing this morning.

Dr. STEVENSON. I would like, on behalf of the whole committee to express our appreciation to all of the members of the committee for the interest taken in this matter by the members of the committee on Interstate and Foreign Commerce of the House of Representatives.

The CHAIRMAN. Thank you.

Mr. HESELTON. Mr. Chairman.

The CHAIRMAN. Mr. Heselton.

Mr. HESELTON. There is one point that has been in my mind in these hearings as we have gone along, and I think every panel of expert witnesses has stressed this. We see the need of more adequate appropriations. That is one matter. The other is the need of more trained personnel. I do not know what the total figures are today, but I imagine they would run into the thousands and thousands. That raises the question in my mind about what can this committee do in that field, and what can Congress do in that field.

Are there enough young people who want to be trained, but who cannot be trained, or is it a matter of stimulating interest among young people who can do it.

Dr. WORTIS. I think Dr. Felix has a statement on that.

Dr. FELIX. As regards the manpower situation there are people who want to be trained, but who cannot be because the training facilities

are overloaded. You will find some training facilities where they may be able to accommodate 1 or 2 more students.

On this point of overloading, 1 instance comes to my mind of 1 institution that has facilities for training 15 people at a time, but had applications from 200, and they were faced with the job of selecting out of that number 15 whom they felt to be the most apt.

So, there are people who can be trained if the facilities permit it, but a professor or a teacher can only effectively teach a certain number of students, because we who sit here, and our colleagues over the country represent not a production line kind of manufacturing, but a hand job, a Swiss watch kind of a job, if you will. We cannot do it en masse. We have to do it, to a great extent, by the preceptor system, where we have constant access to our students and where they can ask many, many questions.

This is the reason that we find more people, I believe, who want to go into this work than there are facilities with which to do the job.

Mr. SCHLAIFER. I think in addition to that, I am of the opinion that if anything is going to really happen in this field, and if we are going to do something about the problem, that it will not be done until there is interest on the part of lay people, professional people, and the interest of Federal and State Governments and the general public, and I hope that you gentlemen in your wisdom, or judgment, after these hearings will be able to come out with some results that will be sort of a clarion call to the entire public and all of the groups to bring it all together in this field.

Mr. HESELTON. I have in front of me one of the volumes of the Report of the President's Commission on Health Needs of the United States in 1951, and I would like to read a couple of sentences with reference to personnel which is required, the first one of which is:

> Medical schools have between 200 and 500 unfilled faculty positions, mostly physicians.

Also:

> To bring these figures up to standard for clinical departments alone would require the equivalent of 600 full-time physicians.

So there will be a shortage at least for the immediate future, as you do not educate physicians overnight.

The CHAIRMAN. Does that report set forth whether the deficiency is due to a lack of interest upon the part of those who could or should become teachers?

Mr. HESELTON. I have not found that, Mr. Chairman.

The CHAIRMAN. Or is it due to insufficient funds?

Mr. HESELTON. I do not happen to have an answer to either one of those questions.

Dr. WORTIS. May some of us comment about this point which has been made by Mr. Heselton.

I am a teacher in a medical school in the department of psychiatry at New York University and my colleague to the left, Dr. Braceland, has been dean of a medical school.

The medical schools of the country today need money.

It costs a good deal to educate a physician. It is different compared to a medical education in other parts of the world.

I have been over on teaching missions to Austria, Hungary, Finland, and Poland while we were still allowed to go in there. I have been very much impressed by the fact that the American student or the American citizen trained in American medicine is trained in a remarkable type of education.

We do not take those people into the first year class and let them go whether they sink or float because we are not interested in them very much.

We are very much interested in training people and giving them the best possible training, and this is extremely expensive.

The medical schools have the same economic problems that industry has. The funds that they have available for teaching do not pay for the medical education which is given to the students. It costs approximately $2,800 a year to educate a doctor throughout each year of his medical training, and the tuition he pays to the school, whether it is $300 or $500, in some States supported by State funds, or in some private institution, the kind of which I belong to, where they pay $800 a year tuition nowhere nearly pays for the training they get.

This field has been helped first because of Federal funds being made available for the training of physicians which will reflect itself in better care of the citizens of the United States.

Dr. SANFORD. On the question of manpower shortage there is one important factor that I should like to mention, and that is this recent change in selective service procedures whereby postponements from induction into the service are no longer given to any students in scientific fields. It is a matter of great concern that the Government should spend money through the Public Health Service and other sources for the support of scientific and technical educational and then have another branch of the Government come along and cut it off before that education is completed rather than having a postponement of that student's induction.

The CHAIRMAN. That point is very well made.

Dr. BRACELAND. The Federal money which has been coming to medical schools has come to them with no strings attached to it, and it has been accepted very gladly by the deans and has been utilized to the very best of their ability.

I might say we are particularly fortunate in psychiatry that we can talk freely, without the question of cost of mental diseases in it because in 1773 nobody wanted patients with mental disease. Nobody else was interested in them, and they all wanted the States and the Federal Government to take care of them. So we have been able to talk rather freely because we are outside of the pale. If this were not done by the States and the Federal Government it would not be done.

Now, without confusing the other groups who have helped with research, I am talking simply about the care of the mentally sick.

The CHAIRMAN. Are there any further comments?

Dr. BLAIN. I would like to say that there is one method by which we can pull ourselves up by our boot straps, which is still important in the personnel situation that has to do with further investigation and administrative practices all down the line. What I am thinking is possibly our national authorities, and particularly the National Institute of Mental Health be encouraged one way or the other to have more money available to make such studies.

In one State in which I personally made a survey about the utilization of manpower it was generally agreed that they were not making the best use of the people that we did have.

We could improve our service I believe 10, 15, or 20 percent by better administrative practices.

There are some researches going on as to the actual time being spent by people working in certain wards.

Informally in mental research we need to see whether all those people are using their valuable time properly.

One major factor in this whole personnel matter throughout the country lies, I believe, in the general principle of the pyramid with the most highly trained people being at the top or the apex of the pyramid, that they can be taught to delegate a certain amount of their wisdom and authority to people who are slightly less trained, who will, in turn, delegate it to those slightly less trained below them, and then you get on down to the vast reserve of those available citizens in the communities and others who can be used.

I would suggest that a lot of effort should be made into looking into that field.

The CHAIRMAN. We feel greatly indebted to you gentlemen for your appearance here today. You have made a very real contribution to the work of this committee.

Last night, in speaking of the work of this committee, I stated that I wished people generally could appreciate the extent to which research is being carried on by distinguished doctors and laymen who are interested in promoting public health, who are not doing it because of any financial return that will come to them which would adequately compensate for the time and effort that is put forth, but who are doing it solely and entirely because of their very great desire to be of help to their fellow men.

That has been one of the most encouraging elements of these hearings that we have held, to see the vast number of individuals who are distinguished in their particular activity who are working in behalf of their fellow men.

We feel greatly indebted that so many of these people, including yourselves today, have come before this committee and given of your knowledge and of your experience to this committee, and it is my hope that the committee will be able to do something that is commensurate with the fine effort that has been put forth by those who have appeared before us as witnesses.

This summary and recommendations on training and research in State mental-health programs will be included in the record at this point.

(The matter referred to is as follows:)

TRAINING AND RESEARCH IN STATE MENTAL HEALTH PROGRAMS—SUMMARY AND RECOMMENDATIONS

By the Council of State Governments, Chicago, Ill.

THE RESPONSIBILITY OF THE STATES IN THE FIELD OF MENTAL HEALTH

1. The field of mental health has broadened rapidly in recent years. Care and treatment of the severely psychotic and the mentally deficient in State institutions remain as important as they ever were, but action for mental health no longer is confined to the hospitals. Concern is growing for the mentally ill

who do not require hospitalization. Important efforts are being made toward early recognition and treatment of all mental illnesses—in mental health clinics, child guidance centers, schools, welfare agencies and other community institutions. New emphasis is being placed on development of measures aimed at prevention of mental illness, through biological, psychological and social research and through public education.

In view of those facts, the States have a widening responsibility for the promotion of mental health both inside and beyond the State hospitals.

Each State, therefore, should appraise the breadth and adequacy of its entire present mental health program in the light of future needs and, within the limits of its resources, assume necessary additional responsibilities for the early recognition, treatment, and prevention of mental illness.

2. Care and treatment by existing methods alone, however, are not sufficient to cope with mental illness. Better treatments and more positive means of prevention are needed, and also a larger number of persons competently trained to put them into effect. Training and research are primary hopes for eventual reduction of admissions to mental hospitals. In addition, immediate benefits accrue to institutions engaged in training and research activities because competent staff can more readily be obtained and retained under these conditions.

Mental health training and research programs, accordingly, should be encouraged and supported by the States, and specific appropriations should be made for them.

ORGANIZATION AND ADMINISTRATION

3. The administration of training and research programs in most States is unsystematic and uncoordinated. Although it is impractical to unify the administration of all State agencies concerned with mental health (hospitals, correctional institutions, public schools, university laboratories, public and mental health authorities, etc.) under one department of State government, increased integration and coordination of their programs is feasible and desirable.

It is recommended that a position of director of training and research be established within the mental health agency in each State to assume responsibility for the coordination of mental health training and research within the State's jurisdiction. It is recommended further that, where possible, regular meetings of the heads of all State agencies concerned with mental health be held for the purpose of integrating their efforts. A technical advisory committee, composed of scientists and educators in the field of mental health, should be established in each State to advise and assist the mental health agency and other State departments concerned in the coordination of training and research activities.

The advisory committee should include qualified representatives of the State hospital system, institutions of higher education in the State and such other private and public agencies as are involved in training and research efforts. The committee should be of the highest technical competence, and thus command the respect of scientists and the public generally. To insure continuity its members should be appointed for specific terms on a staggered basis.

In regular consultation with the advisory committee, the director of mental health training and research should recommend the allocation of appropriate funds for training and research, facilitate arrangements between State hospitals and teaching institutions for internship and affiliate training, cooperate in interstate agreements for professional training, assist individual hospitals and other institutions in establishing training and research activities, secure information on research projects in his own and other States, and participate in an interstate clearinghouse for mental health training and research.

4. Present lack of communication and coordination among State hospitals, universities, professional schools and community agencies makes procurement of staff for hospitals more difficult than it need be, isolates hospitals from the main streams of research activity, prevents maximum improvement in the quality of training and results in duplication of effort and equipment.

The States should encourage their mental hospitals and clinics to affiliate with teaching centers in order to encourage greater participation of State hospitals in field training and internship in the biological and social sciences. Through joint university-hospital staff appointments and other means members of university faculties should be encouraged to originate and participate in research in State mental hospitals. The State mental health advisory committee can be active in promoting close communication between hospitals and teaching centers.

5. One of the important obstacles to adequate evaluation of procedures and therapies is the lack of uniformity in statistical methods in mental hospitals

and clinics throughout the country. Differences in terminology and reporting systems prevent the results of treatment in one hospital from being compared accurately with results in another. Thus the findings of many research studies are not being used as effectively as possible to achieve better understanding of mental disease. The United States Public Health Service is striving to correct this in a pilot group of 15 States.

All States should cooperate with the Public Health Service in the adoption of uniform terminology and statistical reporting procedures in the field of mental health.

TRAINING

6. The adequacy of staff in State hospitals for the mentally ill has improved in the last decade. Substantial increases have been made in the number of attendants, occupational therapists, social workers, and psychologists. Despite the overall increase in staff, however, serious shortages of trained personnel today interfere with effective treatment of patients. The average number of patients per staff member in most mental hospitals fails to meet necessary standards of staff-patient ratios. Especially critical are the heavy case loads of psychiatrists and graduate nurses. Few State hospitals, therefore, are able to make full and effective use of present treatment methods, which could speed improvement of patients and increase the number returned to productive life.

The States should appraise the personnel situations in their State mental hospitals and support, where necessary, training of increased numbers of personnel. They should take steps to encourage an increase in the number of students at the graduate and undergraduate levels in the professions immediately concerned with psychiatric treatment and also in the basic biological and social sciences which affect progress in mental health. State institutions which are not accredited for residency or as affiliate training centers for psychiatrists, clinical psychologists, social workers, nurses, and other professional groups should endeavor to raise the level of teaching and supervision in their institutions to secure accreditation.

The current trend toward increasing the number of courses in basic psychological and psychiatric subjects in the curricula of other professions should be encouraged. Premedical and medical students in particular should receive a more comprehensive background in the fundamental psychological and social sciences, since those who do not specialize in psychiatry will receive little further formal training in them. Social workers, nurses, the clergy, teachers, lawyers, and law-enforcement officials also should be encouraged to include such courses in their training.

7. Inservice training in mental hospitals and other facilities is important for improving the competence of existing staff, for making the institutions attractive to new personnel, for maintaining staff morale and enthusiasm, and for integrating mental hospitals into the main stream of teaching and research in the country.

More extensive and effective inservice training programs for all grades of personnel should be provided in State hospitals. In the larger hospitals such programs may be the responsibility of a training or a research and training officer.

Narrow specialization within the field of mental health does not make for the best care and treatment of mental patients. Inservice training for all hospital personnel should include lectures and seminars designed to acquaint each professional group with the special knowledge and skills of the other professions represented. In many cases basic courses in hospital orientation, patient management, general psychology, psychiatry, the special therapies, and the functions of each occupational group can be organized advantageously into a common curriculum for most of the hospital staff. Inservice training also should provide for interchange of experience in the actual work of the different groups, so that each staff member may both understand and assist in duties other than those of his specialty.

8. The high cost of professional education and the relatively low salary scales in State employment now deter many competent people from entering State employment in the mental health field. Retention of existing staff and recruitment of teaching faculty and research scientists are made difficult because of large salary differentials that frequently exist between State and other medical and educational institutions. Stipends for graduate training are common incentives in many professions. They rarely are provided by States to encourage able students to enter the various mental health professions. It has been shown

that in particular instances a high percentage of students given stipends or field training by particular agencies return to employment in such agencies.

Individual States should consider the advisability of providing stipends for graduate training in psychiatry, psychiatric social work, psychiatric nursing, clinical psychology, physical and occupational therapy, public mental health and the basic biological and social sciences.

Salary scales should be adjusted to reduce to the extent possible differences between public and private scales so that public mental hospitals may compete effectively for the limited personnel available to fill treatment, teaching and research positions.

9. Nonmonetary factors, however, are of great importance in recruiting staff, especially research scientists, for the mental health programs. The adequacy with which hospitals and clinics can be staffed is directly related to the quality of research and teaching in them. Contributing factors include the amount of moral support and recognition given to teaching and research activities by the staff, the extent to which staff are selected and retained on the basis of merit, the availability of academic, library, and laboratory facilities, and other conditions that influence morale.

Hospitals, clinics and other agencies conducting research should make every effort to provide these factors, tangible and intangible, through administrative support of teaching and research programs.

10. The effectiveness of the hospital as a treatment, teaching and research center depends in part on the success with which it utilizes the resources of the community and becomes a community resource itself. An important step in this direction is to involve local physicians and other specialists in the hospital program as part-time staff members. This permits the community physician or specialist to maintain contacts with patients he has referred for hospitalization. It augments the hospital staff, increases the contact between institutional psychiatry and the remainder of medicine, broadens and strengthens teaching in the hospital and improves its community relations. Increased cooperation between community agencies frequently may be brought about by joint staff appointments among public and private hospitals and clinics, child guidance centers, community welfare agencies and correctional institutions.

Hospitals and other mental health facilities, therefore, should use part-time services of professional persons within the community to as great an extent as other requirements permit.

PREVENTION OF MENTAL DISORDER

11. An ultimate goal of research in mental illness is to prevent it. At present positive methods for prevention are limited to relatively few mental disorders.

The urgent need for extending the area of prevention calls for increased research to determine the relative value of various new preventive measures. Future studies, for example, should evaluate scientifically the effectiveness of early treatment measures, such as those of clinics and child guidance centers, the results of improved prenatal care to reduce congenital brain damage, new chemicals which may prevent the onset of some diseases, the usefulness of school classes in "human relations" and the results of improvement in community and family environments. Since it is generally agreed that the foundations of mental disease are most commonly developed in childhood, studies of biological, psychological, and social development of children should be stressed.

RESEARCH

12. The kinds of training and research programs to be undertaken by the States should be determined by individual State resources and needs. The following considerations, however, should be examined closely in formulating a State training and research program:

(*a*) States which already possess major teaching centers, especially universities or medical schools, should coordinate their training and research activities to make maximum use of these institutions and their laboratories. They are natural centers for research scientists, technical personnel, professional meetings, etc.

(*b*) State-sponsored research efforts should be concentrated in or near existing facilities: academic institutions, hospitals, clinics or other laboratories. The acute shortage of trained research scientists usually makes it unwise to set up new research centers isolated from existing facilities.

(c) Many significant research problems, however—dealing especially with the effectiveness of existing treatment methods, with genetic, family and community factors in the cause of mental disorder, and with methods of preventing it—can be pursued advantageously in many areas without large research centers.

(d) The most critical prerequisite to research is scientific personnel. State training and research programs should emphasize the training of research personnel, making maximum use of the special talents and training of available academic and clinical personnel to every extent possible.

(e) Since successful research normally requires continuity of personnel, facilities, and financial support, the States should make every effort to assure sustained financial support, and thus avoid wasteful interruptions of the research program.

(f) Excellent opportunities for important research on mental disease exist in State hospitals, even where hospital personnel lack time or training to undertake it themselves. The States should encourage use of their hospital facilities by qualified scientists from other institutions. Such cooperative research arrangements may speed the discovery of more effective means of treatment, stimulate later research by members of the hospital staff, and improve community relations of the institution.

13. Although some mental hospitals, because of geographic isolation, overcrowding or inadequate staffing may not be suitable for major research projects, most of these can take advantage of potential opportunities for research effort more effectively than is now the case.

Research thrives on original thinking and the free exchange of technical information. Private and industrial research laboratories have demonstrated the value of providing leaves of absence with pay for professional staff who wish to acquire further research training or attend scientific meetings. It also has been found beneficial to make maximum use of research consultants from other institutions.

At present, however, the daily care and treatment demands of most mental hospitals do not permit time for staff members to participate in any except the most casual research.

If headway is to be made against the rising number of admissions to mental hospitals, time and facilities for research should be made available to qualified research workers in them. Research activities in State mental hospitals should be coordinated under a research director. In small institutions, the research director may be the clinical director or superintendent; in other instances, the scope of the research program may require creation of a separate position. This may be particularly desirable if responsibility for the hospital's training program also can be placed under it.

14. Discovery of better ways to treat and prevent mental disorder is contingent on more fundamental studies in physiology, biochemistry, neurology, psychology, sociology and related fields.

Research laboratories in State institutions should be encouraged to undertake fundamental research in the biological and social sciences as well as to seek practical solutions to immediate problems.

15. Research scientists working on problems of mental health and disease need to be in close touch with the latest findings of other scientists engaged in similar studies. There is need for communication among hospitals, universities, and other research centers throughout the country on research in progress or being planned. Such communication can take advantage of new findings quickly and avoid unnecessary duplication of research effort. A scientific clearinghouse now exists, the Bio-Sciences Information Exchange of the National Research Council, from which individual scientists may obtain brief reports on research projects related to their own which are currently in progress.

It is suggested that all States arrange for the use of scientific exchange services by members of their hospital staffs to increase the economy and effectiveness with which research is conducted. Staff members also should be encouraged to publish completed research findings in scientific journals and personally to present papers at professional meetings.

INTERSTATE COOPERATION

16. Where practical, it is desirable for States to provide adequate professional training in the graduate schools of their institutions of higher learning. However, many States which lack major teaching centers for the training of certain professions, are taking advantage of interstate compacts for this purpose. Physicians, dentists, veterinarians, social workers and public health officers are being

trained, or plans are being made for their training, under interstate arrangements of the Southern Regional Education Board and the Western Interstate Commission for Higher Education, both created by compact.

States already participating in interstate educational compacts may wish to consider extension of agreements under them to include specialized training in psychiatry, psychology, nursing, social work, and other specialized practices needed in hospitals and clinics.

Existing training and research centers in a number of States could be utilized as regional institutes for the training of therapeutic teams and for important research programs in the field of mental health. It usually is more desirable for a group of States to support one teaching or clinical training center which can achieve accreditation and prestige through the high quality of training it offers than to attempt to maintain a number of isolated, unaccredited centers able to offer only marginal training.

Where individual States find it impractical to provide adequate training for members of mental health professions in short supply, it is recommended that they enter into appropriate interstate arrangements for academic and clinical training.

17. No State lacks individual opportunity to contribute research toward prevention and improved treatment of mental disorders; but most States, especially those that lack major research centers of their own, could strengthen their research efforts through cooperation with nearby States.

It is recommended that States participate jointly in mental health research suitable for such cooperation and that they investigate practical means to cooperate in supporting and enlarging the research activities of institutions in their regions, under arrangements by which the personnel and cost of facilities and equipment may be shared equitably.

Interstate cooperation for research could be facilitated markedly through leaves of absence for hospital and university personnel in States lacking major research centers to spend periods of time at research institutions in other States.

18. Interstate mental health conferences may be devoted profitably to problems of research, training facilities and standards, treatment methods, hospital administration, forensic psychiatry and hospital-community relations.

All States should cooperate in periodic regional mental health conferences.

19. It is difficult at present to obtain comprehensive data on many aspects of the mental health programs of the 48 States, particularly with regard to current training and research activities. State legislators, State officials, and others concerned with mental health repeatedly seek information on the experiences of other States, to learn what their institutions and agencies are doing to reduce the prevalence and severity of mental illness.

It is suggested that the States establish an interstate clearinghouse, the functions of which may include the following:

(*a*) To maintain up-to-date information on the mental health programs of all States, especially with reference to the scope, nature, and results of training and research activities, and to make the experiences of each State available to all.

(*b*) To cooperate with Federal, local, and private agencies in making maximum use of existing resources in the promotion of mental health.

(*c*) To aid in initiating arrangements, where requested, for interstate cooperation in academic and field training and in use of existing research institutions.

(*d*) To provide expert field consultation for States wishing more detailed assistance in establishing effective mental health programs.

The CHAIRMAN. I would like to say that if you have any additional comments or statements that you would like to have made a part of the record, bring them to the attention of the clerk of our committee, so that we can comply with your request.

(Thereupon, the committee adjourned.)

HEALTH INQUIRY
(Hearing Defects)

FRIDAY, OCTOBER 9, 1953

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D. C.

The committee met, pursuant to adjournment, at 11 a. m. in the committee room of the House Committee on Interstate and Foreign Commerce, Hon. John W. Heselton (acting chairman) presiding.

Mr. HESELTON. The meeting will please come to order.

I would like to explain that the chairman was unexpectedly called back to New Jersey and will not be here during the day. He regrets it very much, because he did want to be here for this hearing. Also, several of our members have been called back to their districts, but I am sure we will have a very satisfactory hearing. The previous hearings have been most interesting and most helpful. For the benefit of those who have just come in today for this particular subject, may I explain these hearings will be printed and will be available to every member of the committee, so that they will be familiar with all the testimony presented to us.

We are to hear testimony this morning relating to deafness and the various hearing defects. The committee is eager to hear what the witnesses have to say on this subject, particularly in the areas of what deafness costs the American people, what is being done and can be done to diminish the problem, and what unmet needs exist insofar as facilities, research, and trained specialists are concerned.

These inquiries this morning are part of a broad series of hearings seeking to lay before the American people facts they should know about health and disease.

It is the chairman's impression that far too little attention, medical and otherwise, is paid to deafness and related disorders. He hopes that you gentlemen will do everything in your power to make the current situation clear to us.

The procedure that has evolved during the health hearings is one in which a discussion leader chosen by the witnesses conducts what is in effect an informal symposium based on a prepared agenda. I understand that such an agenda is at hand and that Dr. William G. Hardy has agreed to serve as discussion leader. The members of the committee will want to ask questions rather freely, Dr. Hardy, and we hope the witnesses will ask questions of each other, also. Our purpose is to make this hearing as informational as possible.

To make the record complete, to assist the recorder in indentifying you, and in order that you may be known individually to the members

of the committee, it would be appreciated if each member of the panel will stand in turn and give a bit of his background and his present position. I notice that several of the witnesses are familiar to the committee, having testified earlier in connection with other disease entities. We welcome them back.

At this point, I would like the prepared agenda and the list of witnesses to be made a part of the official record of this hearing.

(The matter referred to is as follows:)

HEARING DEFECTS—AGENDA FOR DISCUSSION, OCTOBER 9, 1953

I. Opening remarks, chairman, discussion leader.
II. What is the importance of deafness and other hearing disorders as health problems in America today?
III. What are the various kinds of hearing defects? How are they characterized medically?
IV. What is the current status of knowledge relating to these disorders
V. What are the major private and public efforts in the deafness field?
VI. What are the promising lines of research?
VII. What are the medical-care problems in the treatment of deafness?
VIII. What can be done to prevent deafness?
IX. What is the relation to deafness of such disorders as otosclerosis? Ménière's disease? Motion sickness?
X. What are some of the needs in the field? Is there anything not being done that should be done in order to facilitate progress against these diseases?

PARTICIPANTS

Dr. William Hardy, director of the Johns Hopkins Hospital Hearing and Speech Center, Baltimore, Md.
Dr. Aram Glorig, Head, Audiology and Speech Correction Center, Walter Reed Army Hospital, Washington, D. C.
Dr. Leonard M. Elstad, president, Gallaudet College.
Dr. Pearce Bailey, Dr. Seymour Kety, Dr. Fred Stone, National Institute of Neurological Diseases and Blindness, Public Health Service.

Mr. HESELTON. Will you please proceed, Dr. Hardy. Then after the introductions, you may go right ahead with the discussion in any way that you see fit.

STATEMENT OF DR. WILLIAM HARDY, DIRECTOR OF THE JOHNS HOPKINS HOSPITAL HEARING AND SPEECH CENTER, BALTIMORE, MD.

Dr. HARDY. Thank you, Mr. Chairman.

My name is William Hardy. I am director of the Johns Hopkins Hospital Hearing and Speech Center, and am on the faculty of the School of Medicine and Hygiene. During the war I had the honor to serve in a capacity with the Navy directly related to these problems, as have some other members of the panel.

I will ask the other members of the panel to identify themselves in order down the line.

Dr. BAILEY. My name is Pearce Bailey, a physician, presently Director of the National Institute of Neurological Diseases and Blindness; a professor of clinical neurology at Georgetown University; and past president of the American Academy of Neurology.

Dr. STONE. My name is F. L. Stone. I am chief, extramural programs, National Institute of Neurological Diseases and Blindness, National Institutes of Health.

Dr. ELSTAD. I am Leonard M. Elstad, president of Gallaudet College, Washington, D. C., and executive officer of the Institute for the Deaf. I have been working with deaf children for 30 years.

Dr. GLORIG. My name is Aram Glorig. At present I am chief of the Army Audiology and Speech Correction Center at Walter Reed Army Hospital, which takes care of all hearing problems of the Army and Air Force. I am a member of several societies which have to do with hearing and its ramifications.

Dr. HARDY. I would like to make a short statement first and then call on Dr. Glorig to summarize his ideas. It will be necessary, perhaps, for him to leave early.

The approach to the general problem of hearing disorders spreads to a set of definitions and a review of facts as they exist in general.

The term "deafness" has been known and used in our language for many years in a fashion that is too hard to define in medical terms in case finding, diagnosis, therapy, into the problems of rehabilitation, and education.

Dr. Elstad is most experienced in the training of deaf persons. A deaf person, by definition, is one whose hearing is so nonfunctional that he has had to develop language and communication by nonverbal or nonoral means. The hearing mechanism serves as the base for our intake from our environment for the development of speech in a child.

The other level is the group known as the hard of hearing, where there is a hearing disorder but not so extensive that it interferes completely with symbols in ordinary conversation. The differentiation between those two groups is difficult to make clear.

The general problem of hearing defects and hearing disorders continues to be widely misunderstood and misapprehended, perhaps largely because a hearing disorder does not show as a human disability; it does not have a mortality rate; the fear of continued welfare does not show. What shows is the effect of noncommunication or interference with communication in terms of some of the psychological aspects of being able to converse freely, and that results in a real disability.

There are about 200,000 to 250,000 persons who can be called deaf in the sense I have just defined. They have been treated as deaf people, pretty largely employing nonoral or nonverbal communicative means.

There are probably somewhere between 15 and 20 million persons in this country with some aspect or other of hearing disorder as a general broad category, sometimes involving one ear and sometimes both ears.

There are probably somewhere around 1½ million persons who are disabled to the extent of interference with their daily occupations or potential occupations and normal social existence to the extent of needing to use a hearing aid as a means of helping them to communicate.

As we look at the general problem, first from a medical and later from a rehabilitative point of view, there are a good many ways of approaching an analysis. I can speak better, perhaps, as a person who sees the problem at a clinical level. There are four categories:

In the first category, there is the very young child, where the cause of defective hearing may be prenatal, or it may be related to certain natal or immediately postnatal occurrences, many of which center around the field of obstetrics or postnatal infections. In our clinical load, which is large, are tiny infants and preschool children. We estimate that about 40 percent of the children we see who are badly disabled from very early times, immediately following birth or prenatal, have preventable disabilities in medical terms with further knowledge and adequate control of, say, birth circumstances. With the improvement of clinical methods and the further knowledge needed of the basic operation of the hearing mechanism, about 40 percent of the number of cases in early childhood involving serious hearing impairment can be wiped out.

Among school children ranging in age from approximately 6 to 14, a conservative estimate, based on a highly adequate survey system, is 5 percent of hearing disability as a general national figure. For various reasons, a large percentage of that is remediable.

In the adults up roughly to middle age, however, if you wish to define that, I think it is a safe generalization to say about 50 percent of the cases of hearing disorders in adulthood could be prevented by adequate and early controls, because many of them have their onset in childhood.

In the fourth category there is a field that must be approached with complete humility, and that is the whole area of the hearing disorders that occur with old age. I think it is safe to say that nobody in this country or in the world can at present analyze the physiology of old age that results in the breaking down of hearing as one gets older.

There are many details I am sure you will have questions about as to the known hearing impairments and the known means of remedying them. We can think and talk in about three major categories.

The first category has to do with prevention as a general, broad approach to a severely disabling problem or trouble.

The second has to do with medical and surgical therapy designed to cure, mitigate, or reverse symptoms.

The third category is in the general realm of rehabilitation or special training necessary to be carried out when one is faced with permanent hearing impairment which has not been prevented and which cannot be cured.

I would like to comment on one more figure which has been derived by as careful a study as yet made in the field, that at the present time approximately 300 million man-hours of productive effort are lost per annum from causes directly traceable to hearing disorders.

Now I would like your indulgence to hear Dr. Glorig.

Mr. HESELTON. Are there any questions?

Mr. THORNBERRY. Mr. Chairman, I have a few questions, but I thought I would wait until Dr. Glorig got through. Dr. Hardy, let me ask you this: In what field or category do you put those people who lose their hearing at an early age? My parents are both deaf, and I have been associated with deaf people all my life, and most of those I know have lost their hearing in infancy or at birth; at least, that was their history. In what category do you put those people?

Dr. HARDY. I meant to indicate, though perhaps I did not do so clearly, that many of those cases can be categorized under prevention, and the rest have to go under rehabilitation and training.

Mr. THORNBERRY. What is the cause? Does the loss of hearing in most of those cases occur at birth or just after birth? In the history of deafness, do most cases occur in infancy?

Dr. HARDY. About 40 percent of the clinical cases involve a hearing disorder that is prenatal, natal, or immediately postnatal, and about 40 percent are medically preventable.

Mr. THORNBERRY. What percentage did you say are medically preventable?

Dr. HARDY. Forty percent. For instance, the so-called RH factor, neonatal, involves some broad changes in the blood system which, for some reason take their toll, among other things, in the hearing mechanism. That is preventable more now than it used to be. That has not been recognized as an entity more than 13 years now, and the field is slow in going through.

Among a large group of schoolchildren, we find about two-thirds of the problem in total are postnatal, coming from disease entities that are quite well known. Most virus diseases can cause hearing impairment. When you look back over the record of the years, when it was unusual if not impossible to carry out presently known diagnostic procedures, the temptation was to call it congenital deafness. We are beginning to find out now that that was not true. Some of the problems do date from or predate birth, but many others normally accrue from well-known diseases in infancy.

For instance, the incidence of children who suffer severe impairment from measles is relatively little. No doubt there are those who suffer that impairment by a nerve-type destruction of the hearing mechanism and that is a kind of problem that simply is present. When the nerve structure is damaged there is nothing to do about it.

Mr. THORNBERRY. That is the type that results from measles?

Dr. HARDY. Yes. That is one disease and, of course, there are other viruses.

Mr. THORNBERRY. I have a number of questions, but you indicated Dr. Glorig might want to leave early and, rather than hold him up, I will let him go ahead. There are a number of questions in this field in which I am personally interested.

One question which I might ask at this time is this: Doctor, in my contacts with the deaf I think there has always been the feeling that the cause of deafness is largely, as he termed it a while ago, due to being born deaf. My experience is that generally deaf people feel they were born that way.

Dr. ELSTAD. When you take into consideration the deaf as a group, about 30 percent are known to have been born deaf.

Dr. HARDY. That fits the picture very closely.

Mr. THORNBERRY. Is that what you think, too, Dr. Hardy?

Dr. HARDY. That is about the general pattern.

Mr. HESELTON. I take it that someone will give us information as to the type of research that has been done and what can be done.

Dr. HARDY. Yes, sir. We will try to get to that.

Mr. HESELTON. Will you please proceed?

STATEMENT OF DR. ARAM GLORIG, HEAD, AUDIOLOGY AND SPEECH CORRECTION CENTER, WALTER REED ARMY HOSPITAL, WASHINGTON, D. C.

Dr. GLORIG. First, may I explain why I have to leave early? There is a large national committee meeting which is to be held today to discuss this very problem in relation to industry and in the Army, and I am a member of that committee and I should get back as soon as I can. I apologize for having to do so.

To go on a little bit into the problem of hearing losses, certain school surveys indicate that about 5 percent of the children are found to have hearing losses which need audiological attention and that means hearing losses which may be prevented provided they get this audiological attention.

A little more of the problem is represented by the military and veterans' problem. For example, the Veterans' Administration is paying 10-percent disabilities—and in some instances a great deal more—to about 90,000 men at the present time for hearing losses sustained during World War II. This amounts to quite a financial problem when you break it down a little. That is in compensation alone. Now, for hearing aids issued to veterans, since 1949 there have been about 40,000 hearing aids issued at a cost of about $120 each, and when you figure that out it comes to quite a bit of money also. This has nothing to say about rehabilitation and reissue and batteries. The battery problem alone amounts to somewhere near one-half to three-quarters of a million dollars a year to supply batteries for these individuals who have hearing losses and who are using hearing aids.

The Army in the last few years and part of 1945, 1946, and I believe back as far as 1944 rehabilitated 12,000 individuals who sustained hearing losses in the Army, and this is in addition to those which I spoke about in the Veterans' Administration. The Army at the present time, during a so-called peace regime, is rehabilitating about 1,200 men a year. These are both from the Army and the Air Force. The Navy figure is not that large. We issue some 600 hearing aids per year at the center, and to give you a little bit of an insight into what this means to the Army at the present time, we have about 4,500 or 5,000 men in the armed services who are using hearing aids. The rehabilitation has been so thoroughly done that 98 percent of the men we have at the center go back to military duty. Our only restriction is that they not be put in an actual combat situation. I am merely mentioning this to show you that rehabilitation can prevent some of this 300 million man-hour loss, providing we do something about getting it done among the civilian population.

The problems in industry, which are just recently being recognized, although it has been present since 1885, when hearing losses were referred to as "boilermaker's deafness," are now being studied. At the present time it is coming into the limelight due to the number of compensation payments which have come about and the potential which is growing every day.

Mr. HESELTON. What does that amount to?

Dr. GLORIG. It varies from $4 million to $7 million in deafness caused by industry at the present time.

Another point of the problem would be that when men are tested prior to entering into an industrial situation which is a noisy industry,

25 to 30 percent of these men have significant hearing losses, which means that the problem of man-hours mounts rapidly when you start paying for the cases who have hearing losses from the therapy standpoint.

Speaking as a physician—and I am a physician in this field—there are two types of hearing losses. One is the type which affects the canal which conducts the sound to the nerve part of the ear, and that is called conductive deafness, and then there is the nerve type deafness which affects the nerve transmission itself.

The conductive type is, in the main, provided it is found soon enough and something is done about it, amenable to treatment, to therapy of some kind or another—surgical, drugs, or medical management.

The nerve type of deafness is irrecoverable in spite of any treatment we know of today, and I can say, frankly, that at the present time there is no treatment available for deafness which is of the nerve type and, believe me, the nerve-type deafness is a considerable problem in the whole, particularly since we are getting to be a noisy civilization and causing considerably more deafness among workers.

This problem is summarized by the fact that a company which we have been working with, where men who have worked in excess of 10 to 15 years at certain machines, have a relatively common incidence of certain loss of hearing. One hundred percent of these men that have worked in excess of that many years have a hearing loss. This 100 percent is not compensable, but if they go on continuing in this type of work for more than 20 or 25 years, all of them will be compensable.

Dr. HARDY. You mean if they continued at that noise level?

Dr. GLORIG. Yes, sir. Well, the noise level that I am talking about is not much louder than I am speaking at the moment. My voice, if it were measured at the moment, would probably be at the level of 80 or 85 decibels, and if we measured the noise in industry, it would run over 100 decibels and can go up as high as 135 or 140 decibels. If we get into the jet problem with industry, they go even higher.

Dr. HARDY. May I interrupt once more? There will be some comments from time to time in which this term "decibel" will be used. That is a physical measure of the ratio of sound intensity. It works in a logarithmic fashion. If you take 20 decibels and multiply it 10 times, the difference at a 100-decibel-noise factor in a factory is not a ratio of 10 to 120, but a ratio of 1 to 10, which is why, as these figures go up, the traumatic effect is that much more serious.

Dr. GLORIG. I think, then, our therapy for the type of disease we are talking about lends itself more to prevention of the disease, and we are in hopes, particularly the committee on conservation of hearing of the American Academy of Ophthalmology and Otolaryngology, during the preschool days at our baby clinics, of discovering the hearing losses at an early enough age where something can be done about it or prevent a hearing loss from occurring from the ordinary diseases that we see in preschool children.

In several of the States—and too few at the moment—they are having school surveys where every third or fourth year every child is tested to see whether or not his hearing has changed from the previous test. I suppose a relatively good educated guess would be that 1 out

of 5 children in the country is now receiving such a test, and this is a very poor percentage.

The public in general should have hearing tests. As a matter of fact, at this very moment there is such a testing situation going on in Alexandria, where the public-health people over there have set up a testing program once a year, and individuals come in and get all sorts of tests, and, thank goodness, hearing tests are among them, because I believe among the general public there is a lot of hearing loss which is not discovered until it is too late because they do not have hearing tests done as they would have blood-pressure tests or blood tests or any other kind of tests.

In industry at the present time we are trying to get them to employ preemployment and preplacement tests so that the individual who has normal hearing can be protected by wearing ear protection, and we feel if ear protection is instituted in industry to the degree which it should be, the same as glasses are for eye injuries in industry, we can prevent almost the entire industrial hearing-loss problem. It is just as simple as that, gentlemen. Once, however, this hearing loss has been attained or suffered, there is no cure for it.

As I am here to represent the American Hearing Society, a few figures about the society might be in order.

Our aim is conservation of hearing, and I think there is no better aim for a hearing society to have, because we as physicians are charged with the conservation of hearing.

The American Hearing Society has 115 chapters, and they have spent in 1952, including the national headquarters, about $950,000 on the problem of deafness. I prefer to call it hearing loss. About 60 percent of this is for diagnosis, care, rehabilitation, testing, and so forth. About 20 percent is for public education, and, believe me, I think perhaps if the figures were reversed you would get a better understanding. The public needs a lot of education regarding the hearing-loss problem. Twenty percent is for administrative problems.

To show you what is being done at the present time for the hearing-loss problem, the military, in the form of the Army, Navy, and Air Force, have combined with the National Research Council to form what is called a committee on hearing and bioacoustics. This committee is meeting today and is working primarily with the problem of hearing losses in the Armed Forces, but through its connection with the National Research Council and some of its civilian members we hope they will have a great effect on what is happening to the civilian hearing-loss problem as well.

The Army has done a great deal of research work—that is, the military forces, I should say. In the early years of the war and also the later years of the war this has been done. Most of this has been done on a normal hearing to determine how the hearing problem affects communities, and so forth. However, later during the war the Army led the field in the rehabilitation problem along with the Navy. I stated they rehabilitated some 12,000 men.

The Veterans' Administration at the present time has set up a very fine testing system, and they also have some very fine rehabilitation centers for their eligible individuals. They have set up a much better rating schedule for paying compensation, and this is a terrific problem. As a matter of fact, industry at the present time is wrestling

with it very severely, because there is no recognized way to develop a disability for an individual. That is, if he has so much hearing loss, how much in disability does he actually have from the standpoint of his work.

We have several committees working on it and also a combined committee of the American Medical Association and a subcommittee from the Ear, Nose, and Throat Society. Also we have a so-called Z24X2 committee, which is a committee formed by the American Standards Association, to explore the problem of standards in industry. In other words, just how much noise can an ear stand before hearing loss occurs, and how long does it take to produce such a hearing loss. This committee has been in existence 2 years, and it will come out with a report, which in no way will be a standard, because we feel we need 5 to 10 years of research before we can come up with a definite answer as to how much noice and what kind of noise and how long a period of exposure will produce hearing loss.

At the present time, we are sending out a report which will give a relation between the number of years of exposure to certain kinds of noise and the hearing loss produced. We do know that noises produce hearing losses.

Dr. HARDY. I wonder if I could interrupt again. From what you say in your general description, it would seem true that certain institutionally centered programs in the armed services and Veterans' Administration have contributed a very high level of help to people with hearing disorders and one which is greater than any similar situation applicable to general groups of citizens. Is that true?

Dr. GLORIG. I feel that this is very true, and that is why I am mentioning the Army and the VA program, because they have a program which individuals have access to which the civilian population does not have access to accept in the form of a few universities like Johns-Hopkins, which is one of them, and it should be made available to the civilian population, but I am afraid it will take a lot more research and public education and such things than a committee of this sort can do in the way of public education.

Dr. HARDY. Can you estimate even in rough terms the expenditure of funds from the armed services and other Federal agencies like the Veterans' Administration in research in regard to the casual picture?

Dr. GLORIG. The ONR has expended to my knowledge somewhere up close to $400,000 in the problem of hearing. However, most of this research, as I stated in the beginning, has not had directly to do with hearing losses but more with normal hearing and its relationship to the general physical needs of the man in the Armed Forces. However, from the standpoint of hearing losses, I think there is a pretty poor sum that is actually being spent to study the problem of hearing losses by either the Armed Forces or civilian agencies.

Dr. HARDY. That is what I meant.

Dr. GLORIG. As a matter of fact, it is negligible. There is no amount to it that I could mention that would be worth mentioning.

Dr. HARDY. As I understand, it is dissipated throughout a variety of private institutions and agencies. I do not mean the money is dissipated but the effort is dissipated.

Dr. GLORIG. Yes, sir. But if you centered it all in one group, it is not enough by any means to care for this problem.

That is all I have to say.

Mr. CARLYLE. What percent of disability is assigned to a veteran when he is found to be totally deaf?

Dr. GLORIG. Well, if he is totally deaf—and total deafness in the Veterans' Administration means a loss of 85 percent of his hearing faculties, which is relatively, in percent terms, probably 80 to 83 percent on the basis of 100 percent of deafness—he gets total disability, and I think that amounts to around $165 a month.

Mr. CARLYLE. They do assign total disability for total deafness?

Dr. GLORIG. Yes, sir.

Mr. CARLYLE. Doctor, where deafness is caused by obstructions, of course, that can be removed. Is that correct?

Dr. GLORIG. By what?

Mr. CARLYLE. Obstructions.

Dr. GLORIG. Yes, sir. Obstructions by disease or foreign bodies or whatever it is. Is that what you mean?

Mr. CARLYLE. Yes.

Dr. HARDY. There is one qualification, and that is if it is done early enough. The facts are clear that there are long continuing factors in the chronic condition, but the defects accrue accordingly.

Dr. GLORIG. All I heard was the word "obstruction." What was the rest of your question?

Mr. CARLYLE. Can it be cured?

Dr. GLORIG. I did not hear that part of your question. I suppose, even in the conductive hearing losses a relatively good guess would be less than 50 percent of them can be. I would not go so far as to say cured, but can be either stopped so far as progression is concerned or helped. It is very difficult to cure an obstruction type of deafness. If a baby is brought in to you and he has a pin in his ear and you take the pin out, of course, the chances are he is going to be all right. However, if some older person comes in and you remove this, this is a complete cure, but you never can cure a damage that is done to the conductive part of the mechanism, because if this disease has gone on long enough, the way they are before they get attention, you have damage which cannot be repaired surgically or otherwise.

Dr. HARDY. That is why I believe Dr. Glorig would agree that so much emphasis is currently being placed on getting at the problem early.

Mr. CARLYLE. Is it normal for a man as he grows older to lose some of his capacity to hear?

Dr. GLORIG. Yes, sir. This is a problem at the present time in making up any sort of a rating scale for compensation. For example, you can take the case of industry. Now, industry wants to know if they have got to pay a man for a hearing loss and how much. Is it normal progression due to age? Several agencies have been working on the problem, and one is the Public Health Service, and there is another one in San Diego, and a man by the name of Dr. Bunch did a survey, and on the basis of these figures which they arrived at, I would say a man who had—of course, you have to separate this also into frequencies, which is a little technical, but let us divide them into low and high frequencies. At the high frequency, after 50 years of age, a man begins to lose considerable of his high frequency hearing. This does not affect his job. After 60 years of age, he will lose very little on the upper end of his frequency. However, he will not suffer much

of a disability from the actual normal progression until he is past the age of 70. Even then, if he is in good condition mentally and alert, he does not notice it too much. However, there is a natural progression just as there is with vision.

Mr. CARLYLE. Is it normal for a person who has been able to hear and then loses his capacity to hear to become extremely nervous?

Dr. GLORIG. Well, this is something I should have mentioned before, and I had it down here, but insofar as the effect on the individual is concerned, as Dr. Hardy has stated, it does not have, as he called it, a "killing" complication, but it does have a severe psychological effect on the individual, and this psychological effect is in proportion, of course, to the amount of hearing loss. But a hearing loss which needs help is not very much of a hearing loss actually when you put it down in figures.

To go back to percentages, which I think everyone understands, a 30 or 35 percent hearing loss will give quite severe psychological implications in the form of paranoia and this type of thing. I do not mean it causes this type of disease, but if there is any tendency in the individual toward this type of psychological problem, deafness brings it out definitely. So therefore we are now doing some psychological surveys in the clinic, and we are finding this out, that there is a definite tendency toward hysteria in the individual with a hearing loss.

Mr. HESELTON. Are there any further questions, gentlemen?

Mr. THORNBERRY. Doctor, you referred a while ago to the examination of people as to their hearing. Is it generally true that there is no examination until after the child goes to school?

Dr. GLORIG. This is unfortunately true, and that is why I mentioned hoping that we would be able to get into the preschool problem. Believe me, the preschool problem is not as simple as the school problem. This testing method needs suggestive response, and if the child is younger than school age, it is difficult to determine the exact extent of his loss. So preschool testing is another problem which we hope we can answer later.

Mr. THORNBERRY. The reason I asked that question was because of what you said in regard to the cure or prevention of progressive loss of hearing and that it was necessary to get to children at an early age.

Dr. GLORIG. That is the secret of the whole problem, and at the present time preschool children are not being tested in any situation.

Dr. HARDY. There is another point that comes in there. In a broad course of events, a variety of problems presented, the major problem presented in the preschool testing is that, if preschool children who are in serious trouble because of hearing disorders have a nerve tissue impairment which is the result of disease infection or whatever other prenatal injuries may have been suffered, at the time of school age it is rather difficult to handle. However, for reasons that are pretty well understood to anyone who has spent much time around this part of the country where the climate is damp, the incidence of respiratory infection rises very fast, and probably that is due to a lot of children being together and exposing each other. In other words, somewhere in the age range of about 6 to 8, by all manner of means, the higher proportion of hearing disorders is of the conductive type and relates to

upper respiratory infections, and, as Dr. Glorig pointed out, that can be healed. We cannot reverse it, but if gotten early enough, it can be helped.

The other point is that, with generally wide health techniques of examining large numbers of children, there naturally comes into being problems in terms of administrative care at the level where children are insufficient to be able to respond to a good or designed test.

Mr. THORNBERRY. I understand that, but what worries me is that from what I understood you to say, even after you are able to examine children at that stage, it may be a little late.

Dr. HARDY. It certainly is too late to begin an operation or begin thinking about the problem of a certain child who has a serious impairment, because he has, before school age, already gone too far without attention. His developmental point for these aspects of language and speech and so forth are centered in the 4 years before school age.

Dr. GLORIG. I think the point here is not so much that we are able to reverse this process, but we are able to get the child in an educational setup whereby he will make the best of what he has if we get him early enough. However, we usually wait too late, and then it is a much more difficult problem.

Mr. THORNBERRY. Let me ask you this question. Is a large part of the loss of hearing hereditary?

Dr. GLORIG. A large part of it? You mean the whole problem?

Mr. THORNBERRY. Yes. I mean the cause of it.

Dr. HARDY. Speaking in clinical terms, no, sir. A significant amount is, but I do not believe that there is any evidence that a large proportion of it is.

Mr. THORNBERRY. A significant amount is? Do you have any idea about how much that is?

Dr. HARDY. I can only deduct that from direct clinical experience, and our statistics are no good. We see children who are in trouble, and we have no way at all to relate that to an incidence. Of the last 850 cases of preschool children whose problems we studied carefully 17 were assignable clearly to a direct family strain.

Dr. GLORIG. Otosclerosis, which is hereditary, is of the entire deaf problem less than 5 percent.

Mr. THORNBERRY. Has there been any attempt to trace the family background as to whether or not some time ago they may have had it in the family?

Dr. ELSTAD. Our records would show that this 30 percent holds up pretty well, which we mentioned before. Of course, we have no way to check it.

Mr. THORNBERRY. That is what I understood awhile ago. So many say it is hereditary, but I am not so sure that is true.

Dr. HARDY. I think you are quite correct. The medical field is beginning to demonstrate beyond any doubt that, although these problems exist on a prenatal basis, it is not hereditary in a large proportion.

Mr. THORNBERRY. May I ask this question? It may sound ridiculous, but to the lay person it is not. Have you ever examined or found a person who was deaf, who, along with that, lost his speech? I know they do not talk, but so often they are referred to as deaf and

dumb people. They really do not speak, as I observe them, because they cannot hear. You have never run into anyone who was deaf and did not have speech organs?

Dr. GLORIG. No, sir. Well, you might have cases relating to a congenital condition, as it relates to a finger or thumb and so forth, but I have never seen one in my experience who did not have speech organs.

Mr. THORNBERRY. You often have people referred to who are deaf as being deaf and dumb, and they do not appreciate that very much when the term "dumb" is used.

Dr. HARDY. As a matter of fact, that is one of the reasons why this field has been so very slow in developing in terms of general education and in professional education. It has been assumed for years that this problem lay so far beyond comprehension and that nobody could do anything about it that they referred to them as "deaf and dumb" and felt that they belonged to some other level of society.

Mr. THORNBERRY. I think this is a field which has received less attention than any other one, and needs it very much.

Dr. Bailey, are any Federal funds set aside in the National Institute for this problem?

Dr. BAILEY. We have a responsibility for hearing losses in the National Institute of Neurological Diseases and Blindness, and we have an intramural program in which the amount set aside right now is very small. We are the youngest Institute of the National Institutes of Health, and we were born at a rather unpropitious time from the standpoint of economy. Although we have definite plans for research at the Clinical Center at Bethesda and we do have one or two people working on the physiological side of deafness and on the problem of hearing loss, it is very small. Besides this intramural program, we do have an extramural program which awards research grants to nonfederal institutions and universities for research in the problem of hearing loss as well as neurological diseases and blindness. I believe Dr. Stone has the latest figures on that.

Dr. STONE. In the fiscal year 1953, we supported 5 projects in the total sum of $60,987—roughly $61,000; in fiscal year 1954 we are supporting now 8 projects in the amount of $72,573, and I would like to say at this point that we were forced to turn down, for lack of funds, approximately $50,000 in applications that we got in the hearing field that we could not support.

Mr. THORNBERRY. How much do you allow for blindness?

Dr. STONE. The amount for blindness in the last fiscal year, that is, the fiscal year 1954, is $392,000.

Mr. THORNBERRY. I believe those are all of the questions I have right now, Mr. Chairman.

Mr. HESELTON. Mr. Williams.

Mr. WILLIAMS. Quite a belief prevails among the lay public that the intermariage of relatives quite often causes deafness in offspring. Is there any evidence to support that?

Dr. HARDY. That statement, to my knowledge, sir, is a little bit too broad.

That there is some hereditary strain which is genetic, which involves the lack of development of the hearing mechanism, yes, there is a good deal of evidence that, but my goodness, I think we would be going pretty far to say that intermarriage is a cause for hearing dis-

order, except that might involve general physical deterioration, and, therefore, be one of many possible results.

Two studies are being undertaken now in a community in which the family strains are particularly close, in which otologists have been interested in the past 7 years. In these particular families, both show the trend of strain. There are 360 in one group, and 158 in the other group, and they have two different types of impairment among those families.

I do not think of any sociological facts to support the other generalization clearly.

Mr. HESELTON. Excuse me, Mr. Williams. Do you wish to ask Dr. Glorig any questions? I ask that at this time because he wishes to get away.

Mr. WILLIAMS. I would like to ask him one question.

Doctor, you apparently are pretty familiar with the rating schedule of the Veterans' Administration in deaf cases.

In the case of men with amputations and men who have lost an eye, in addition to the percentage rating they are also granted a statutory award. It used to be $30, and I believe it is $47 now.

Does that apply also in the case of a man who has lost the faculty of hearing in one of his ears, or who becomes deaf?

Dr. GLORIG. Not that I know of; no, sir.

Mr. WILLIAMS. That is all.

Mr. HESELTON. Does anybody have any further questions of Dr. Glorig?

Doctor, we thank you very much for coming here this morning.

Dr. GLORIG. Thank you very much, Mr. Chairman and gentlemen of the committee.

Dr. HARDY. You have touched in your questions on a couple of basic ideas about research. I have some personal opinions about this that may or may not be shared by other members of the panel group here.

I think, apparently from the facts that there are several lines of research, some of which are being followed, and all of which need to be further developed than they presently have been developed.

First there is a line that has to do specifically with prevention, and that is a specific medical inquiry at the level of both pure research, if you will, and applied clinical research, and the casual relationship between such things prenatally as damage in embryo and the effect of the RH factor, and damage in embryo or immediately after birth to the hearing mechanism, and more particularly the effects of withdrawal or the absence of a sufficient amount of oxygen in the blood as accompanying the phenomenon of birth.

Those are large questions that need a great deal of inquiry and attention focused on them generally and by people in obstetrical practice in various parts of the country.

It is one state of affairs in a large metropolitan center where there are large hospitals with big medical staffs, and it is quite a different thing out across the country where that kind of good medical attention is not available.

Then there is a range of research inquiry that has to do with the restoration of impaired hearing, so far as that can be done.

Dr. Glorig commented on some of the problems centered around otosclerosis.

It is a familiar thing, which involves the growth of bone in the middle ear structure.

It usually has its onset toward the end of the second decade of life. As information is being gathered more extensively, it becomes clear that there are certain instances of it at birth or early in childhood.

Largely that problem is handled in these days by a procedure called fenestration, in which that part of the organism is bypassed and a new entrance is made into the inner ear structure.

Otherwise the problem is handled by rehabilitative methods.

The essential point is that a good deal more inquiry simply must go on about the effect of some of these basic pathologies beyond that presently known.

One inquiry we have been concerned with locally has to do with the maintenance of that part of the hearing mechanism leading to the middle ear in good mechanical function because we know, or feel we know, that many of the problems of conductive impairment in childhood center around organic malfunctioning, and everybody is searching for good, readily available, clinical tools that can be applied early in preventive treatments, to try to make sure that such chronic effects as we talk about do not occur.

There is another major category that has much to offer in terms of fundamental research in physiology and partly in pathology and in the entire field of geriatics.

Whether you realize it or not, the reduction of infant mortality and the extension of the life span at the other end cause literally untold, uncounted kinds of problems medically and in rehabilitation.

We do not yet know about the results in physiological terms in some of these aging processes to be able to think clearly about them.

We do not know the time and the nature and the extent, for instance, relative to Dr. Glorig's remarks, of the effect on the hearing mechanism of the aging process through the decades 60 to 70, 70 to 80, and from 80 on. Now, that information must be obtained.

Mr. HESELTON. Doctor, may I ask you a question which may sound absurd, but what does a hearing aid do?

Dr. HARDY. A hearing aid, sir, makes sound louder.

Mr. HESELTON. Is that confined to one where there is a conductive defect?

Dr. HARDY. No, indeed. We are beginning to have the courage of our convictions and with all of the professional power we can exert in terms of professional advisers and consultants, when we know the facts and the diagnostic picture is clear in these cases and everything has been done that can be done medically and there is enough residual hearing to act as a foundation for amplification through hearing aids, we use them. We start infants wearing hearing aids these days as soon as they are able to walk. The youngest aid user was 9 months old.

That was a slightly different problem. That child was born with a condition called bilateral atresia in which the external and parts of the middle ear failed to develop. Later when he is perhaps 5 or 6 years old surgical steps will be taken to correct that, but it cannot be done now. In the meantime he has to live for the next 6 years.

The nerve structure is perfectly normal and at the age of 21 months that child has a vocabulary of about 50 words, and I am sure that

within another year he is going to get useful communicative development.

There are a lot of misconcepts of what a hearing aid can do. It does not have any brains and all it can do is amplify sounds coming in if there is enough residuum in the hearing mechanism in an adult, for instance, or a younger person.

Dr. ELSTAD. Is there not such a thing as having sound perception but no sound interpretation? I have a young man in my office and if he closes his eyes and I speak in a loud voice, he cannot get a thing, but if I speak to him when he has his eyes open, he can understand. He has sound perception.

Dr. HARDY. It is a correlative thing.

Dr. ELSTAD. Yes; they work together.

Dr. HARDY. Yes. Do you care to make a statement at this time, Dr. Elstad?

STATEMENT OF DR. LEONARD M. ELSTAD, PRESIDENT, GALLAUDET COLLEGE, WASHINGTON, D. C.

Dr. ELSTAD. Mr. Chairman and gentlemen of the committee, I am not an M. D. and I am not a Ph. D. I am an honorary LL. D. I have spent 31 years in working for the deaf. My part here is to show what is being done for deaf children.

We have 21,000 children in various schools for the deaf today in residential State schools, deaf schools, and special day schools for the deaf; 14,000 of those are in State residential schools for the deaf.

There are State residential schools for the deaf in all the States except Delaware, Nevada, Wyoming, and New Hampshire.

These children go up to approximately the 10th grade in high school. They are about 18 or 19 when they finish that course and they go out into industry at that time.

Those children who go to day schools go to approximately the eighth grade and in many cases get their education along with hearing children. Unfortunately, many of them, because of the communication handicap, are not successful in high school and drop out of school at an early age.

Then, in higher education, there is only one college for the deaf and that is the one of which I am president, Gallaudet College. It is a private corporation subsidized by Congress and, being so, we have three Congressmen on our board, one of whom is Mr. Thornberry here, who is a very good member.

Gallaudet College is a liberal arts college for the deaf. That does not mean that it is not possible for a deaf high-school graduate to go to an ordinary hearing college, but it is easier for them to get a full college education in a college such as ours where it is geared to the handicap under which they labor.

There is no excuse today for any deaf child not getting an education in any State of the United States.

Mr. HESELTON. Would you give us an idea of how many students you have and from where they come?

Dr. ELSTAD. You are speaking of the college now?

Mr. HESELTON. Yes.

Dr. ELSTAD. We have at the present time 262 students enrolled this fall. They are from 40 States, 4 from Canada, 1 from England, 1

from Transjordan, 1 from India, 1 from China, 1 from Norway and Sweden.

These students come to us through competitive examinations which are given in May of each year.

This being the only college for the deaf in the country it should be large enough to take all students who qualify for admittance, but so far it has not been able to do it.

We have 92 acres out here, just 10 minutes from this building. We have a lot of ground out there, but we do not have buildings enough to take care of the students.

Mr. THORNBERRY. When was your last building built, Doctor?

Dr. ELSTAD. In 1917 the ladies' dormitory burned down, and we got a new dormitory to take its place, but that is the last new building we have.

It was chartered by Congress, and Abraham Lincoln signed the charter in 1864.

Mr. HESELTON. You say if you had the school facilities you could take care of more students?

Dr. ELSTAD. Yes, we could take more.

Mr. HESELTON. How many more?

Dr. ELSTAD. Dr. Gallagher estimated that we should have a capacity for 700 students. I would say between 500 and 700. At the present time we have 262.

These students have such a tremendous handicap in communications that not too many can get up to college level, but as you increase your effectiveness at the lower levels in the schools, you get more who can qualify for college, and that is being done all the time.

We use the sign language, and we also use speech at the same time. It is called the simultaneous method. The students see a professor speaking in sign, and at the same time it is spoken, and a hearing person can sit in and get it as well as a deaf person.

In a hearing college, a deaf student has to have somebody take notes for him, and he takes those notes home at the end of the day and studies them, and he might as well take a correspondence course. Also in connection with the rest of the college life, he is always in the audience trying to catch on to what is going on.

At Gallaudet College we have 22 organizations, and a student can be secretary, treasurer, or president of an organization or a member of the athletic teams. He plays in the game and does not sit on the bench. It is a completely participating program.

Mr. WILLIAMS. Dr. Elstad.

Dr. ELSTAD. Yes, sir.

Mr. WILLIAMS. I have been out to your school several times as you may recall.

Dr. ELSTAD. Yes, sir.

Mr. WILLIAMS. Like Mr. Thornberry I have quite a personal interest in the affairs of the deaf.

The thought occurred to me at the time I was out there, and the first time I ever saw it, that there would be the best place I could think of for the Federal Government to spend a little money to replace those old buildings you have out there and give you a plant that you could operate in.

Unlike Mr. Thornberry, I am not on the board, and I have no connection with the school at all except through my interest in it as

a Member of Congress. I wonder if any plans are under way toward presenting some kind of a program to Congress whereby you might get some new buildings and some new facilities?

Dr. ELSTAD. The present budget which is before the President's Bureau of the Budget at the present time calls for a new library and a classroom building.

We had a hearing on that request about 3 weeks ago, and I am afraid that is going to go by. I do not think it will get by the Bureau of the Budget, so it will never get to Congress. Our problem is to get by the Bureau of the Budget.

Mr. WILLIAMS. Doctor, I believe if you could get 435 Members of the House and 96 Senators to go out there and look at it you could get some new buildings.

Dr. ELSTAD. We could not get the Bureau of the Budget committee out there. I invited them, and they would not go.

Mr. HESELTON. Is there any tuition involved?

Dr. ELSTAD. No student is kept out of the school because of the lack of financial support.

There is a series of Federal scholarships for the students, but we have tried, as far as we have been able to, to get as much out of tuition as possible.

Out of 82 students enrolled this fall we have an average of $600 per student in tuition. When I came there the tuition income was $45,000, and this fall it will be $178,000. So, we are getting as much as we can out of that source, and we ask Congress to make up the difference.

Mr. HESELTON. Do the school officials around the country know of the opportunity to refer deaf children to your college?

Dr. ELSTAD. Unfortunately, public-school systems that educate deaf children do not know about it. I had a couple come into the college last fall, and they had a girl who had graduated from a deaf school in Chicago, and they did not know about it. It is unthinkable that they should not hear about the one college for the deaf in the country. We will do something about that. That is the trouble with this whole problem. There are 200,000 deaf people and 150 million hearing people in the country, and they just do not hear about them.

Helen Keller said:

> The problems of deafness are deeper and more complex, if not more important, than those of blindness. Deafness is a much worse misfortune. It means the loss of the most vital stimulus—the sound of the voice—that brings language, sets thoughts astir, and keeps us in the intellectual company of man.

That is very well put. She said if she had her life to live over again she would devote more time to the problems of the deaf because it is the most severe of the two handicaps. That is something that is not generally understood by many people, and it is very difficult to get private funds.

Mr. HESELTON. I am ashamed to confess it, but I must confess to having been in this city going on to 10 years, and this is the first I have ever heard of the college.

Dr. ELSTAD. That is not unusual.

Mr. HESELTON. It is just too bad that it is not more widely known so that more people can avail themselves of its facilities.

Mr. THORNBERRY. I am deeply interested in this problem, and as I have said to Mr. Williams so often the Members of Congress just do not realize what is at the school.

You said that your tuition income was $178,000?

Dr. ELSTAD. Yes; that is right.

Mr. THORNBERRY. How much more does the Federal Government appropriate?

Dr. ELSTAD. Our request is for $430,000 this coming fall, and we estimate that we will take in $178,000 in tuition.

Mr. THORNBERRY. That does not include the library?

Dr. ELSTAD. No. The deaf have raised $100,000 for the library.

It is our feeling that if Congress knew that the deaf themselves have raised $100,000 that they would throw in the other $240,000.

Mr. THORNBERRY. I think we ought to get somebody from the Bureau of the Budget Committee to go out there.

I asked you about the women's dormitory. The majority of the buildings are how old, Doctor? I am sure they were built long before 1917.

Dr. ELSTAD. The buildings are from 50 to 60 years old. Our gymnasium was built about 1875. We patterned that after the one at Harvard. It has to take care of the health program of 262 young men and women, plus the children in Kendall School, and it is just impossible to do so adequately. Members of the Middle States Association came down, and they say you have to have funds in an institution as well as physical improvements.

Mr. THORNBERRY. You referred a minute ago to tuition income, Doctor. Is it not true, generally, that people who are deaf and the children, particularly, that come to your school as students have come from families who cannot afford the cost of higher education?

Dr. ELSTAD. Yes; that is very true.

There are very few of them who can pay the full tuition.

We say that it costs us approximately $1,600 per student. We give an $800 scholarship, which leaves the children $800 to pay. In the case of the vocational rehabilitation agencies in the various States they usually take care of $250, leaving $550 for the parents to pay.

We try to get them to pay as much as possible, and if they can pay, all well and good. If they cannot pay any of it, we still enroll the student. We get a lump sum from Congress to make up the difference, but we never turn a student away because of lack of funds.

Mr. THORNBERRY. I think that is a point that is not generally understood either. I know at home I have been working with 2 or 3 deaf students to help them obtain admission. I will say this to the doctor, that last year while he was trying to get all he could, I was a little concerned that he was almost too anxious to obtain all he could.

Dr. ELSTAD. Yes.

Mr. HESELTON. What was your appropriation this year?

Dr. ELSTAD. $430,000.

Mr. HESELTON. How much did you get from Congress?

Dr. ELSTAD. $410,000, and they put it up $20,000. We were the only group in the Department that got a raise, and we were impressed with that.

Mr. THORNBERRY. Now, I want to ask 1 or 2 other questions about this, and I think, perhaps, the committee would be interested in it. You said you were executive officer of the Columbia Institute for the Deaf. In that connection, explain just a little about the training school for teachers.

Dr. ELSTAD. In 1881 Dr. Gallaudet asked Congress to appropriate a small sum for the establishment of a teacher-training course for teachers of the deaf, college graduates. It has been training from 7 to 15 teachers, and since 1891 we have Holland and Spain in that also, and Thailand started the first school for the deaf 2 years ago with one of our graduates. India and Spain have also. Bolivia sent students up and they started a school for the deaf. So it has an international aspect, too. Then, of course, we train the deaf teachers of the deaf.

There are 500 deaf teachers of the deaf in the country today and practically all of them are graduates of our college.

There are, frankly, some who believe that the deaf should not teach the deaf, that it should be done by them at the lower levels, but at the high-school level children should be educated solely by speech and lipreading. That is the Bell school of thought. They believe it should be all oral and that the sign language should not be used. The other group, the Gallaudet group, believe you should use every method, manual or oral, that will bring results. I think that is being disputed to some extent. I think and I hope it will be.

Mr. THORNBERRY. Explain about the Kendall School to the committee.

Dr. ELSTAD. We have at Gallaudet College Kendall School, which was established in 1857. It was established for District of Columbia deaf children of preschool age up to, say, high-school age.

We write a contract with the District of Columbia each year to educate their deaf children.

We have 55 children from the District and about 30 in the Kendall School from outside the District.

It is of great value to us to have that school because of this graduate department where we have these teachers in training who use that school as a practice school for their teacher training, and we think it is a very good school.

The new buildings we have are in the Kendall School. Congress gave us $131,000 to build a unit for colored children, and that is the only new unit we have. The college itself has not gotten anything in the way of new buildings since 1917, but these little children have the new building which was built this last year.

So we have 33 colored deaf children there who used to go to Maryland to get their education.

We took them up on our campus last fall for the first time, and then we have some white children.

It is the only campus in the United States where you can get an education from preschool age up to postgraduate college work all on one campus.

Mr. WILLIAMS. Doctor, getting away from the medical aspect of deafness just a minute and getting around to its sociological aspect, I have had quite a bit of experience in observing the activities of the deaf down in Mississippi.

I have found that among the deaf practically everything revolves around the deaf school in Mississippi, including not only the children but the old folks and everybody else.

Is not the school, so far as the deaf are concerned, the focal point of their society?

Dr. ELSTAD. Yes. The deaf have been criticized because they are clannish, but people who criticize them do not realize the handicap of deafness. You enjoy yourself much more when you are with those who understand you, and the deaf understand each other.

As a group of 200,000 people, they are self-respecting, self-supporting people. They have a national fraternal society of the deaf which has been in existence for 50 years.

They could not buy insurance, so they established their own insurance company, and it has been successful. That was the NAD, National Association of the Deaf.

As I say, the State school for the deaf is usually the center of interest and activity in each State. The alumni associations of these various schools are the same way.

Mr. WILLIAMS. I have one more observation, Doctor, and I think you will probably be able to substantiate this. Is not the crime rate among the deaf people practically zero?

Dr. ELSTAD. It is very low.

Mr. WILLIAMS. They seem to have a very intense devotion to honesty, personal pride, and integrity.

Dr. ELSTAD. You are perfectly right. Recently there was a misquote in a newspaper here in Washington, that deafness was going to bar a person from driving his car. I wrote to Mr. Keneipp and he wrote back immediately and said, "The deaf have the best record of driving in this city of any group," so that did not work. That was a misquote.

Mr. CARLYLE. Mr. Chairman?

Mr. HESELTON. Mr. Carlyle.

Mr. CARLYLE. Doctor, in industry, where have you found that the deaf find the best opportunities?

Dr. ELSTAD. I would say in printing there was the most money, and most of them go into that. There is linotype operation and presswork. I would say that is the best.

Dr. HARDY. Actually, in broader terms, sir, in the whole range of hearing disorders—that is, with a lesser disorder than the deaf group Dr. Elstad has been talking about—there are relatively few limits that should be exerted in industry except those which involve exposure to an undue amount of noise. Relatively few.

Dr. ELSTAD. That is right. Civil service lists thousands of jobs they can hold. They are doing very well.

Mr. THORNBERRY. Will you excuse me, Mr. Carylyle?

Mr. CARLYLE. Yes.

Mr. THORNBERRY. The greatest need for people who are deaf is an opportunity for training?

Dr. ELSTAD. That is right.

Mr. THORNBERRY. That is all that bothers the deaf. So many of them do not have the opportunity to receive training that will enable them to do things.

Dr. ELSTAD. That is true.

Mr. THORNBERRY. As I will say again, if you will excuse a personal reference, I grew up among the deaf. My mother and father were deaf and were educated in a school for the deaf, and have taught there, and I grew up with them.

Given a necessary amount of training, it is almost possible for them to do anything. As you say, there is no special exception made for the deaf, even though we have made exceptions for the blind, in the social security and tax laws and otherwise. There is no place where there is a special exemption for the deaf.

Mr. HESELTON. Any further questions?

Mr. ROBERTS. Mr. Chairman?

Mr. HESELTON. Mr. Roberts.

Mr. ROBERTS. Doctor, I have had the pleasure of visiting the college out there, and I think it was one of the best deals I have ever had in Washington. I was out there at one of the graduation exercises. Do you have any hospital facilities for the students out there?

Dr. ELSTAD. No. When I came there 8 years ago we did not even have a nurse, but we have a nurse now; and we have a hospital room in the men's dormitory and 1 in the girl's dormitory and in 2 of the smaller dormitories we have 1 room set aside. If there is an illness, they have to go to a hospital in the city.

We have now an insurance policy that covers both sickness and health; that they all have, that they all take advantage of.

Mr. ROBERTS. Is that premium paid by the student?

Dr. ELSTAD. If he can. Vocational rehabilitation pays it in some States. It is 100 percent.

Mr. ROBERTS. Separating the administrative expense from the expense of food and the textbooks and equipment, about what would your average spending on each student there in the school be?

Dr. ELSTAD. Well, as I said awhile ago, it costs us around $1,600 for the whole expense, the per capita cost. I would say about $1,100 of that would be for teaching. About $500 or $600 would be for maintenance, I would say. I cannot give you the exact figures.

Mr. ROBERTS. Does the $1,600 figure include everything?

Dr. ELSTAD. Everything.

Mr. THORNBERRY. Food?

Dr. ELSTAD. That is rather low, compared with the country in general. I think on the average per capita cost some of them go as high as $2,200, such as in the State of Illinois.

Mr. ROBERTS. It would not include clothes, of course?

Dr. ELSTAD. No. We give nothing for that.

Mr. ROBERTS. That is part of the student's expense?

Dr. ELSTAD. Yes.

Mr. ROBERTS. I have a fine school for the deaf in my district in Alabama, the Alabama School for the Deaf and the Blind.

Dr. ELSTAD. True.

Mr. ROBERTS. I do not know whether you know about that.

Dr. ELSTAD. I know Dr. Ryan.

Mr. ROBERTS. Do practically all of the States and Territories have schools for the deaf?

Dr. ELSTAD. Every State, with the exception of Delaware, New Hampshire, and Nevada, has a State residential school like Alabama has. Those States will send them to the neighboring State and pay the full cost there.

Mr. ROBERTS. Most of those schools teach through senior-high school?

Dr. ELSTAD. No; they do not. They go through about the 10th year. That is why our college, for instance, has 5 years. It has a preparatory

year which bridges the gap between what that school does and what is done in the freshman class. We have a 5-year course.

Mr. ROBERTS. You maintain, I assume, very close liaison with the schools in the various States, do you not?

Dr. ELSTAD. We do.

Mr. ROBERTS. Do you have any kind of a part of the year set aside where representatives come here and go over these problems, or is that mostly through the deaf associations?

Dr. ELSTAD. No. That is done usually from the administration office in that school with their school. Two years ago we had an institute where we invited students from the various schools to come, with the idea of looking the place over. We had 90 students who came from 30 States for a week. We put them up for a week. They paid their transportation. It was a very fine experiment. It was hard to find sleeping space for them. We were surprised to get so many.

The standards in the various schools are not the same. We are trying to see if something can be done about that. We take the State certification, usually.

For instance, Alabama would certify nine students as qualified. We would take them on the certification. Now our examination is an examination of exclusion, because we cannot take more than a few, so we have to have some way of keeping them out. That is the way it is done, by examination.

Mr. ROBERTS. What type of academic degree do you confer?

Mr. ELSTAD. B. A., B. S., and occasionally they can come back for an extra year's work.

For instance, this year we enrolled a girl who was a graduate of Augustana College, Rock Island. She is a deaf girl from Augustana College, Rock Island. She wants to teach the deaf physical education. She cannot get a teaching position unless she has education credit, which she did not get. She is coming to us for a year to take our education course for the year, and she is going to work her way through by helping us with physical education. She will go out at the end of the year with her credits that she needs and she can get her position as the physical education teacher in a school for the deaf.

Mr. ROBERTS. At most of the State institutions—I know of one at Talladega, Ala.—they conduct various forms of enterprise, such as sewing and that sort of business, for people who are not necessarily in the school. The people who are deaf come in there and make these things and then put them on the market. That is done at Talladega by both the deaf and the blind. Is any of that type of work done there at Gallaudet, or is it strictly academic?

Dr. ELSTAD. It is strictly academic, but as we expand, our offerings are going to have to be more diversified. For instance, there will be drafting and business courses. There is a demand for that now. We have hard enough times getting the staff to teach the college courses, without branching out. That is coming.

Mr. ROBERTS. In other words, you do have in mind that the trade school feature will be developed?

Dr. ELSTAD. That is right.

Mr. ROBERTS. For those who do not prefer to go through the academic part. If they want to learn a trade, that will be possible?

Dr. ELSTAD. That is right. They can have an associated arts course. There would be 2 years of college, with terminal courses, so that they can leave at the end of 2 years and be given a credit for it.

Mr. ROBERTS. Of course, that would naturally call for additional appropriations from the Congress?

Dr. ELSTAD. That is right. We got no money for additional staff this year, but in the hope of getting the necessary instruction I hired 5 new instructors for $20,000. As a result of this work, we are getting it done.

Mr. ROBERTS. Off the record.

(Discussion off the record.)

Mr. ROBERTS. We appreciate the fine work you are doing up at that college.

Mr. HESELTON. Doctor, you gave a figure earlier as to the economic loss by reason of deafness, did you not?

Dr. HARDY. 300 million man-hours is the best generalization that has been arrived at by a pretty responsible survey.

Mr. HESELTON. Nobody has translated that in terms of dollars?

Dr. HARDY. No, sir; you would have to go through the wage scale. It amounts to quite a bit.

Mr. HESELTON. This committee in the last week or 10 days has had some very difficult if not unsolvable problems presented to it in terms of these various diseases which have been discussed. I would think that Dr. Elstad's presentation offered one of the most immediate means of helping to minimize that economic loss, as well as to make people who are unfortunately deaf have a much happier and fuller life.

Dr. HARDY. That figure, Mr. Chairman, does not relate to this group. That is exclusive of this group of deaf people. This relates to the status of hearing disorders in general in the population, exclusive of the deaf group. They were not included in it at all. This is man-hours lost of productive activity of folks who have been going along.

Mr. HESELTON. Yes. But in terms of young people who are handicapped and thereby not able to prepare themselves for a productive life this institution here will be a marvelous thing.

Dr. HARDY. That has never even been counted.

Mr. CROSSER. Mr. Chairman?

Mr. HESELTON. Mr. Crosser.

Mr. CROSSER. Referring briefly to your subject of heredity, suppose that you had a father who was absolutely deaf and dumb, as we understand it today, and a mother who was likewise, except that she might be able to make out what a person might say. What would you say about the likelihood of the children, if they have any in such a case, being affected?

Dr. HARDY. As a scientist I would have to ask one more question, Congressman. What caused the impairment in either one or both of the people?

Mr. CROSSER. Well, of course, now, the father was a minister. He preached in a deaf-and-dumb church. The wife was a mother. They were both deaf and dumb.

Dr. HARDY. I cannot answer it intelligently because of that factor of causal determination which is critical to it. In the normal course of events it is quite natural to expect, and it does commonly happen, that two people who have similar kinds of handicaps and are thrown together in a social group somehow or other get around to being

married. That is a social event which is totally unrelated in medical terms as to why they are deaf.

Mr. CROSSER. What would you expect?

Dr. HARDY. As a clinical scientist I naturally do not expect anything until we know more about the particular problem in all of its detail.

Mr. CROSSER. The father I am speaking about could not understand me and I could not understand him. The mother could.

Dr. HARDY. If there had been similar instances back down in their family background and a variety of people who had arrived at the same point——

Mr. CROSSER. The wife in this case was deaf. If I would speak very slowly and carefully she could understand what I meant, although she could not hear it.

I happen to know that they have 2 children, both grown up, and if you ever saw 2 very loquacious individuals those were the 2 children.

Mr. THORNBERRY. Off the record.

(Discussion off the record.)

Mr. CROSSER. This man was an Episcopalian minister.

Dr. HARDY. One of the things the field in general is trying hard to get at is to find these children early enough and get the facts on them and try to see to it that those who do not need to grow up as deaf people do not grow up as deaf people. There are many steps to be taken to redeem them, if you will, rehabilitationwise, for many children who otherwise are let go and have no attention paid to them and who naturally have only that as a future.

Mr. CROSSER. Until I heard what my colleague from Texas has said, I had heard of no other case but this one.

Dr. HARDY. We can give you ample assurance that happens very frequently.

Mr. CROSSER. It was amazing.

Dr. HARDY. That was what I meant, sir, in the comment a while ago. Until better means of apprehending these various problems have been developed, there will be difficulties in solving them. A child may lose a great deal of his hearing at the age of 2. In prior years they just automatically put them in the category of deafness. In the view of many people he might as well have been born deaf because he never learned to talk. But actually what caused the impairment had nothing to do with prenatal experience.

Mr. CROSSER. These people were all educated people, although it was hard for them. They educated the children, and they were all well educated.

I suppose you are quite familiar with this new treatment by surgery operated by this man in New York. I cannot think of his name.

Dr. HARDY. You mean fenestration surgery?

Mr. CROSSER. They go into a very delicate operation.

Dr. HARDY. That is Dr. Lempert you are referring to. That surgery is a specific for only 1 kind of hearing impairment from 1 source. It is not generally applicable. For instance, it has no use at all for a nerve-type impairment.

Mr. CROSSER. Well, one of the doctors out at the Naval Hospital, I know, does a lot of successful operating with that.

Dr. HARDY. Yes.

I wonder, Mr. Chairman, if we should take a few minutes to get back to the general question of research in the field.

Mr. HESELTON. Yes.

Dr. HARDY. And some of the needs. Dr. Bailey, will you address yourself to that?

Mr. HESELTON. Before you proceed may I ask one question of Dr. Elstad.

Does the Department of Health, Education, and Welfare have any specific office whose duty it is to follow this education problem and rehabilitation problem?

Dr. ELSTAD. So far, up until this year, it was just on budgetary matters, but now there is a liaison man appointed, Mr. Baxter, who have five institutions. Ours is one. He has Howard, Columbia, St. Elizabeths, Freedman's and one other. We are getting excellent service from him.

Mr. HESELTON. Proceed.

STATEMENT OF DR. PEARCE BAILEY, NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS, PUBLIC HEALTH SERVICE

Dr. BAILEY. First of all, Mr. Chairman, allow me to excuse myself for appearing before this committee twice.

Mr. HESELTON. You are very welcome.

Dr. BAILEY. I assure you I am not trying to afflict myself on the committee, but the spectrum of diseases covered by our research institute is so large it cannot be covered in 1 day.

I would sort of like to make a few remarks on how we tie this up from a research program standpoint. As you heard in the testimony previously, our research responsibilities cover neurological and sensory disorders.

As you know, neurological disorders are diseases of the nervous system, and sensory disorders are diseases of the important end organs of the brain, particularly the eye and the ear.

Now, in medical practice there is a tendency to separate these disciplines. Thus we have the specialty of neurology, the specialty of ophthalmology for blindness, and the specialty of otolaryngology for deafness.

Now, in research we do not need these artificial lines of demarcation. They are all part of the same system. That is, the eye transmits light to the brain, and it is the responsibility of the brain for perception and interpretation of visual images. In the same way the ear conducts sound to the brain which is recorded, received, and interpreted by the brain.

Therefore, blindness can result from disorders of the nervous system or the eye, and in the same way deafness can result from disorders of the ear or the brain or both.

To show you the rather across-the-board nature of it, if you will remember last Wednesday we spoke of some work we were contemplating on regeneration of nervous tissue. Well, if such experiments prove practical the results would be beneficial to injuries of the nervous system and also to the visual system and to the hearing system. That is, you have the optic nerve and the brain in the visual system and the auditory nerve and the brain in the hearing system.

I would just like to mention one aspect which may not come out, which is related to the problem anatomically, at least, of hearing. That is that from the nervous standpoint, the standpoint of nervous tissue, there are two nerves connected with the inner ear; the cochlear nerve for hearing and the vestibular nerve for special orientation and equilibrium. These nerves naturally lead to different parts of the brain; rather adjacent parts of the brain.

There are diseases which involve this vestibular apparatus as well as the hearing apparatus. Perhaps the most common is motion sickness, which includes seasickness, car sickness, and air sickness, which, though a rather temporary disability, is of major importance particularly from the military standpoint. As you can realize, with landing operations and things of that sort, the question of motion sickness is of critical importance.

I have said before that we have a program on hearing impairment, to get to the bottom of it both from the standpoint of medical and clinical research, at the new Clinical Center. We have not as yet received sufficient funds to implement this program.

We have a program and extramural projects through non-Federal institutions, of which Dr. Stone gave you the amount. If you care to, Dr. Stone could say a few words on what type of project these are and what areas they cover in the hearing field.

Thank you very much.

Mr. HESELTON. Thank you, Doctor. Dr. Stone?

STATEMENT OF DR. F. L. STONE, CHIEF, EXTRAMURAL PROGRAMS, NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS, NATIONAL INSTITUTES OF HEALTH

Dr. STONE. In fiscal year 1953, it was really the first year in which our extramural research grants got under way. Actually, in that year of time we had two grants that extended for any reasonable period. They were largely of a clinical nature.

But in the last half of that fiscal year and the present fiscal year of 1954 we have, as I told you before, supported a greater number of grants. The trend of these grants is to maintain the clinical level that was then apparent. But additional work which is fundamental to the hearing process is also being supported. I mean it is fundamental in the sense of physiology of the hearing process and the biochemistry existing within the hearing end organs.

This, I think my colleagues will agree, is a very healthy situation, researchwise, in the sense that fundamental findings are being made available for clinical application. All of these research grants I have mentioned but one, as a matter of fact, are taking place in a hospital environment or a medical school environment, where the basic findings can have immediate clinical application.

Dr. Hardy and I were discussing the situation just before the hearing started. It actually is a twofold problem we have. It is a problem of finding the money to support the individual projects, but it is also an equal problem, and perhaps greater, to find the money to support the training of scientists, both clinical and basic, so-called, for further experiments in this field. It is actually a twofold problem relative to needs.

I remember that on Wednesday when I was here I believe you addressed yourselves to the question of what were the needs. In one sense it is actually a twofold need. There is a need for research moneys to support projects. There is also an equal and perhaps a greater need for moneys to support younger researchers in their training toward a research career.

We have several extramural activities by which we do this. Actually we have two types of programs. One is a grant type of program where a large sum of money is given to an institution in the name of the man in the department. And we have another type of program where we give individual stipends to high caliber younger people for their individual support during a year of training.

I will not proceed further with these details unless the committee wishes.

Mr. HESELTON. Are there any questions?

Possibly you will not care to answer this, Doctor, but one member of the panel will. What about the medical personnel who are available to treat these diseases? Is it adequate, in your opinion?

Dr. HARDY. The availability of clinical personnel for treatment is perhaps the only part of the question that is reasonably adequately met. That there are enough well-trained men available where they are needed is another question which is perennial with all sorts of professional training. I think the big dearth centers in young people, well-trained basically in the various disciplines, who apply, who go on with the training to become sophisticated and knowledgeable about some of these very fast-moving modern trends. I think that is one thing that Dr. Stone meant implicitly. You cannot carry out any concerted program of research without a strong support from various sources to provide funds for equipment and the expenditure of specialists' time and the like of that.

But, so help us, you cannot even begin that job unless you have adequate people far enough along in the field so that they can project imaginatively and ask the right questions to be answered later on in a laboratory.

Mr. HESELTON. What about the availability of instruction in medical schools? Is that pretty well set up so that people can receive that sort of instruction?

Dr. HARDY. It is spotty, Mr. Chairman, but I think certainly there is plenty of evidence that it is present in enough places scattered across the country, enough key positions, key medical institutions, which usually involves teaching hospitals which have a source of supply of problems to study and therefore a means to fill in the curriculum. Yes. I do not believe there is a great dearth of teaching institutions available.

Mr. HESELTON. You stressed the importance of the early discovery of treatment of hearing difficulties.

Dr. HARDY. Yes, sir.

Mr. HESELTON. Is the situation satisfactory so far as attending physicians are concerned? Do they understand the necessity of that and do they, generally speaking, see that that sort of specialized attention is given to the infant?

Dr. HARDY. It is just beginning.

Mr. HESELTON. Just beginning?

Dr. HARDY. Just beginning. This treatment, as we presently know it now in clinical terms, with the tools that are available and what information is coming through from basic and clinical research jobs, is not as old as the last year of World War II. It is moving very freshly, very fast.

Mr. HESELTON. Proceed, Doctor.

Dr. HARDY. Does anybody else in the group wish to add to this general question of research?

I think we may summarize at this point, Mr. Chairman, unless there are other questions from the committee.

Mr. HESELTON. Are there any further questions?

Mr. THORNBERRY. Off the record.

(Discussion off the record.)

Dr. HARDY. I believe the picture can be summarized fairly directly. I think we tried to cover at least the high spots of the general field.

There is an ongoing, slowly developing program designed to find cases at least of certain ranges of children's problems, now centered under the public health or school health auspices in most States. That program has not gone very far.

As Dr. Glorig suggested, in his opinion perhaps 1 out of 5 children who have these problems are known by case-finding techniques and actually are being followed through. The necessary indicated steps in diagnosis and therapy are shown. A good deal more needs to be done.

That is one need in the field for professional personnel trained in modern terms to move into those programs and organize them better from the community level on up. That probably will not happen until and unless there is much further development in public education in these specific terms and needs.

I think it is worth while restressing over and over that the preventive aspects of this question of hearing disorders are by all means the most important. When one deals in the field of prevention, he is dealing not with the 100,000 or 200,000, but with potential millions, and the figure gets there very rapidly, across the period of one decade. It stands to reason, I think, from any approach, that prevention of disease and of the effects of disease must be No. 1 on anybody's roster or agenda of things to be done.

The next step is in the field of restoration of impairment. A good deal of work is going on, but the surface is barely being scratched largely because of some implications of what Dr. Bailey and Dr. Stone have been discussing. There is a great dearth of knowledge and information of basic physiology, basic function and disfunction. That kind of research must center in adequately equipped institutions.

There there is a third aspect of the field, which includes the broad range of rehabilitation in the widest sense. As I would define that now, I should assume that that also includes all known and knowable steps of education or special training. At the level that Dr. Elstad addressed himself to for the deaf people, but also at the level which is being addressed by every State organization of vocational rehabilitation that is necessary, to find the best aptitudes and see to it that the individual is helped by whatever means society can provide, to achieve accomplishment in those aptitudes.

You have three aspects: Prevention, restoration, and education and rehabilitation. They all need a vast amount more help, understanding, and information at every level.

Personally I believe that the No. 1 requirement is people trained and interested and willing to go on to work, and then funding for the particular jobs of inquiry that those people are able to address themselves to.

Mr. HESELTON. That completes your testimony?

Mr. HARDY. Unless the panel has something more to say.

Mr. HESELTON. I cannot resist repeating that in the course of this hearing it seems to me that there are at least two points as to which something can be done and rather quickly. One is that I hope the Appropriations Committee is going to know a good deal more about the work you are doing, Doctor. Certainly that is a very practical and very profitable way of attacking a certain part of this problem, it seems to me.

Next is in connection with the fact that I suppose almost all births today are attended by physicians. It seems to me it ought to be possible to see to it that in the general medical schools the problem which you have outlined to us is made very clear to all practicing physicians today and to obtain their cooperation. It would seem to me that would be an invaluable asset to the work you would like to do with the young children.

In any event, I am sure this hearing has brought to this committee a great deal of very valuable information, and I dare say that many of my colleagues, like myself, have learned it for the first time, rather well along in life. I can assure you that the committee does appreciate the care with which all of this has been prepared. We realize you have had to come here at some inconvenience, but we feel confident that each of you may look forward to something this committee may be able to do in this field which will reward you for coming here this morning.

The committee will stand adjourned until Monday at 10 o'clock.

(Thereupon, at 1:08 p. m., Friday, October 9, 1953, an adjournment was taken.)

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